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JOHN A. HANNAH
KANSAS CITY



Man and His Lifebelts

YIAGELI OLIGOM
YTIO SAMAR
OM

MAN
and
HIS LIFE BELTS

BY
E. T. Bell

Baltimore

THE WILLIAMS & WILKINS COMPANY
1938

VARIOUS COLUMNS
VTO RABBIAN
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TO GRACE,

whose fireside chats on Life are to blame for this book.

Je ne pense point qu'il y ait tant de malheur en nous, comme il y a de vanité, ny tant de malice comme de sottise:

Nous ne sommes pas si pleins de mal, comme d'inanité: nous ne sommes pas si misérables, comme nous sommes vils.

—*Montaigne, Bk. I, Ch. L.,*
(De Democritus et Heraclitus).

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Chapter I

INTRODUCTION. PROSPECT

A Daniel come to judgment!—SHAKESPEARE.

I. SINK OR SWIM?

WHEN Noah herded his wife, his sons, his sons' wives, and a menagerie that would have done credit to the Greatest Show on Earth aboard the Ark, he carried no lifebelts and no insurance whatever. He needed none. Jehovah had contracted to let him and his Ark down gently, as was duly done, after the greatest rain in history, on the summit of Mount Ararat. There, according to missionaries who have seen it, the Ark rests to this day, a guaranty more substantial than a million rainbows that under the right conditions insurance is superfluous and lifebelts unnecessary.

Since Noah's escape, our sinful race has somehow never found it prudent to forgo the paraphernalia of life-saving prescribed by insurance brokers before confiding itself, body, soul, and breeches to the Devil or the deep. Possibly a regrettable but on the whole understandable decline of faith, or a very human desire to let itself down rather than be let down, is responsible for humanity's misadventures in navigation since it walked down the gangplank of the Ark. Whatever the reason, if there is any, it seems to be a fact that every attempt of our kind to recover the dignity which Adam lost when the apple upset him has ended in

disaster, occasionally ludicrous enough, often sufficiently stupid to make the seraphim swear.

Time after time, with a serene forgetfulness of earlier wrecks,—religion, government, scientific invention, economic science—our hopeful species has donned a lifebelt as the ship was about to founder, confident that this or that lifesaver was less rotten than its predecessors. And time after time the cupidity or incompetence of the manufacturers of lifebelts has let down the deluded believers who trusted in them. If the manufacturers of salvation have let us down, we, not they, are the more culpable—if we must blame somebody for recurrent disaster; for we, not they, have been crass enough to believe that this time, surely, the new lifebelt will sustain us. With a tenth of old Noah's weather-sense we should have come in out of the rain at least two thousand years ago, and would not now, for the fourth time in ten or twelve centuries, be swallowing deluges of bitter water laced with bilge before following our ship to the bottom.

Is the whole story of our race to be a monotonous epic of "sinking ships and praying hands"? Is the past a false prophet of the future? We may take our choice, and believe what we please, for "no man knoweth the future". Leaving the future to take care of itself, we may find it beguiling for an hour or two to listen to the past and the present. Then, according to taste, we may set out on our voyage with as much or as little excess baggage as we please. Those who travel light will have little to lose and the less to regret. If the ship is to harbor safely in some fair haven beyond the sunset, those who carried with them all their earthly possessions and celestial hopes will no doubt gladly share with their impoverished fellow passengers who left everything but curiosity behind. Otherwise, the haven will not be so fair.

Of those who are travelling light, the friend whose name appears on the dedication page is one of the lightest-hearted aboard ship. Long ago she proved to herself that we human beings are a moronic lot, damned beyond hope of redemption by our ineluctable stupidity, and bound by our very nature to make a fiasco of whatever betterment we attempt. Such a pessimism as hers is scarcely decent, and in the following chapters I shall endeavor to see exactly what is in it and ascertain what, if anything, can be done to make it less disreputable.

It will prevent a possible misunderstanding if it is clearly understood that the following chapters are not intended as an "attack" on anybody or anything. Whoever assaults a policeman simply lacks good sense, and I have carefully walked round the block on more than one occasion to avoid even saying "how do you do?" or "good night" to a custodian of the law. A further caution: nothing is clarified by shouting "right" or "wrong." Our only business will be to inspect a few of the lifebelts which our race has believed in, and to see what happened to those believed. Without their beliefs, the majority might have fared much worse than they did. But such speculations cannot be checked objectively, and they are no concern of those who care for facts.

Should it turn out that my friend is justified in her disbelief in the rest of us, there will be no occasion to wring our hands and pull long faces. Damned we may be, but we can at least "take the cash and let the credit go," for it is the most we shall get. Nor is there any necessity for going about our examination of the facts draped in sack-cloth and ashes. Many of our past misadventures have been ludicrous. What is there to be sorry about? Remembering too that dignity is the cloak of fools, and that it frequently invites a richly merited kick, we shall

do well to leave oracular jeremiads to the prophets, and go about our business in our working clothes. And finally, we may remember that there are hundreds of millions now living who would rather be damned with almost anybody than be saved with almost any of the past or present saviors of mankind, or even with the Archbishop of Canterbury.

2. DANIEL SPEAKS

Before going on there are one or two matters that must be cleared up. First, Grace objects to the quotation from Shakespeare crowning this chapter. She says it may be misconstrued as a claim, which she does not make, to be considered a modern Portia. As nobody who has ever talked for five minutes with Grace would dream of confusing her with a female surrogate for an attorney, I have let the quotation stand. It was Daniel that I wished to display, not Portia. For I am convinced that I did see an older and more credible Daniel through the mists of centuries in my dream, and I feel that he was striving fervently to tell our civilization something of the most urgent importance for its immediate salvation.

There have been dreams within dreams and, less commonly, dreams about other dreams. A recent one of mine was of the latter kind. It concerned that remarkable passage in the Book of Daniel, chapter 2, verses 31 to 35, where Daniel told King Nebuchadnezzar what he—the king—had dreamt. Any paid psychoanalyst will decipher your dreams for you, but not one in thousands can tell you what you have dreamt when you have forgotten. According to the biblical account the muddle-headed king had experienced a very alarming nightmare which he had completely forgotten, and none of the Chaldean soothsayers could recall it for him. It is here that Daniel enters. To

provide the appropriate setting for my own vision, I must repeat what Daniel made Nebuchadnezzar believe he had dreamt.

“31. Thou, O King, sawest, and beheld a great image. This great image, whose brightness was excellent, stood before thee; and the form thereof was terrible.

“32. This image’s head was of fine gold, his breast and his arms of silver, his belly and his thighs of brass,

“33. His legs of iron, his feet part of iron and part of clay.

“34. Thou sawest till that a stone was cut out without hands, which smote the image upon his feet that were of iron and clay, and brake them into pieces.

“35. Then was the iron, the clay, the brass, the silver, and the gold, broken to pieces together, and became like the chaff of the summer threshing-floors; and the wind carried them away, that no place was found for them: and the stone that smote the image became a great mountain, and filled the whole earth.”

My own dream began about half-way through verse 35, at the dramatic comment when ‘the iron, the clay, the brass, the silver, and the gold’ were smashed to bits by the meteorite, or whatever it may have been, that demolished the feet of the image. I had arrived on the scene, how I do not know, before the wind, and I was not asked to believe the rest.

Every detail of the vast plain I found myself observing stood out in quiet, vivid color. No city or village was visible, and I am sure that I saw all there was to be seen; yet, about two hundred men and women, as fresh and as un-travelstained as if they had just left their dwelling places, were gathered in attitudes of stunned despair round some object in their midst which, as yet, I could not see.

By one of those flashes of self-contradictory illumination familiar in all really good dreams, I realized that I was witnessing the end of the world although the world had not yet ended. Less irrationally, the world of those men and women had ended, forever, for them. Whatever might be happening elsewhere in space and time, if there was an elsewhere, was beyond any possible knowing of theirs; they were through with everything. It was the end.

With a chilled feeling that I had known from the beginning of time what was the object of their stunned wonder, I perceived it. They were staring in dazed hopelessness at the wreckage of the image whose "head was of fine gold," but whose feet, unhappily for the mourners, were "part of iron and part of clay."

Naturally enough, when the source of my dream is remembered, all the human actors in the catastrophe were clad in traditional biblical costumes—or what the Victorian illustrators of children's bibles imagined the ancients arrayed themselves in. The mild pastel blues, greens, yellows, and subdued reds, all except one garment of trumpeting scarlet, harmonized softly with the mellow desolation of the plain in a masterpiece of utter melancholy. By the anachronism of dreams, I knew immediately that the scarlet garment clothed one of the Ten Foolish Virgins, although those silly damsels are nowhere to be met with in the Old Testament. Presently I became aware of a rhythmic murmur, like the far-off echo of a chorus in a Greek tragedy, and gradually I understood what the mourners were saying.

"Oh, he has fallen down," a stout, swarthy woman in blue lamented.

"Yes," her neighbor to the right, a despairing man in green, intoned, "he has fallen down."

"His head was made of gold; he has fallen down," a metallic voice crashed out of nowhere.

"His feet were of clay; he has fallen down," three score and ten chanted together.

Over and over again the dirge rolled across the plain like the waves of a dying sea washing a dead world: "He has fallen down; his feet were of clay; he has . . .," in an interminable pantoum that all but put me to sleep within my sleep.

Just as I was about to sink through the bottom of everything and come out—or fail to come out—at the other side of nothing, I saw the stranger, and was instantly jarred awake, that is, back to the plain of mourning. I had not noticed him before, nor did I see him arrive. When I first observed him, he was "circulating freely"—the words are those he himself wished me to use—on the outskirts of the crowd, craning his weazened neck in a vain effort to see over the shoulders of the mourners.

His gabardine, a sinister brown, was tattered and threadbare, yet clean enough. His walk halted slightly. Hirpling along with the aid of a crooked stick, he gave the impression of a man not lame or deformed, but full of vinegar. His cruelly lined face was indifferent rather than contemptuous, and his acid smile more amused than scornful. Yet it was plain that he was impatient with those good citizens, all better clad and more tenderly nourished than he, whose poor world had come to a sudden and disastrous end, and still more impatient with their reiterated lamentations. I could not clearly discern whether he was of the same race as the mourners, but I thought not. He might have been a distant cousin of theirs, possibly a Philistine among Hebrews, or an infidel among believers. I called him the Solver, because I knew that to be his wish.

Being unable to see over the shoulders of the upright men and women he had as yet tried, the Solver, obviously attracted by the conspicuous scarlet, made his way to the spot where the Foolish Virgin stood. She was an unattractive, dumpy young woman, and for a moment I was disappointed until I divined the Solver's purpose. His eye was more accurate than mine, and he had indeed judged well: without so much as craning his neck, he now gained an unobstructed view of the object of all that people's great and abiding sorrow. A gleam of almost Satanic intelligence flashed over his lean face, lighting up his eyes like a reflection from Hell. To my amazement he took up the chant, and clear to the moment of revelation I thought I had been deceived by superficial appearances.

"He has fallen down, has he?" the solver remarked to nobody in particular and everybody in general.

"His head was made of gold, was it? And his feet of clay?"

The despairing chant answered him: "His feet..."

Suddenly I returned from the dead to the living, catapulted from the past to the present by the Solver's unanswerable question:

"Why didn't the silly fool stand on his head?"

I thought I understood the Solver's question, till Grace pointed out that our race might now be in a worse state than it is if it had attempted to use its head instead of its feet in attacking its problems. This was merely the first of several differences of opinion between us.

3. AGREEMENTS AND DISAGREEMENTS

Although Grace forbids the use of her full name on the dedication page, this book is a collaboration, and is as much hers as mine. It grew out of a radical difference of

opinion between us concerning the position in modern society of scientists and their work. Each of us is closely enough in touch with men of science to be entitled to an opinion on the social significance of what they are doing or, perhaps more important, of what they fail to do. We disagree, just as almost any pair picked at random out of the general population would probably disagree.

Womanlike, Grace gives the scientists the benefit of whatever doubt there may be about them and their work. To use a word which she might scorn, the true man of science, pursuing knowledge for its own sake, is in some degree "consecrated." To me, the purest of the pure among "pure" scientists is *socially* as stupid, as stupidly selfish, and as selfishly stupid as the rest of us, be we religious racketeers, grafting politicians, crackpot economists, messianic educators, money-grabbing inventors, cut-throat industrialists, swindling petty merchants, or just plain, average citizens of the United States of America. I may have believed differently once, but that is neither here nor there. When I come to it in due course, I shall state Grace's side of the case as cogently as I can; in fact she will speak for herself. My own side has not been unduly thrust forward at the expense of hers, and I can only hope that my exhibits are as convincing as hers, to at least some.

That difference of opinion was strangely soothing. It had the usual effect of most rows royal of making us agree on nearly everything else for the moment. In particular, we agreed on what motivates the whole of our joint enquiry into lifebelts. Anyone but a bland optimist will admit that the outlook for civilization might be brighter than it is. Even the young people, usually so hopeful, detect nothing very alluring in what the immediate future seems to be offering them. They see themselves about to be

shoved over the precipice by the massed stupidity in which they struggle with the rest of us, all of them alike apprehensive and aware, but none able by himself to hold back the crowd in which he is one. Each of his generation is as intelligent and as eager to escape as he himself is, but all together are impotent.

It is like a horrible nightmare: here are millions of young people, each and every one of whom, as an individual, is striving with all his mind and all his muscle to turn round and walk away from the precipice, while every effort he and his fellows make but urges them all toward the brink. What can they do about it? Their answer is "Nothing," and some righteous folk upbraid them for their "defeatism," their submission to the inevitable. Perhaps we shall begin to understand their hopelessness when we have inspected a few of the hopes which have decoyed hundreds of millions to precipices less sheer than that on whose brink the young of today totter, not even looking back to us for a rescuing hand. And yet those same righteous muddlers of their own opportunities berate the young for snatching what brief pleasure they may before they are swallowed up by the abyss.

With this spectacle before us, Grace and I adjourned our terrific debate on the consecration of the man of science and his work indefinitely, and turned to a dispassionate inspection of other alleged consecrations of other kinds of men and different sorts of work in the history of our ingenious and credulous race. But always at the back of our minds, as we inspected one deflated lifebelt after another, was this uneasy question: Is science to differ from other proposed and ineffective remedies, and save us from our own stupidity? Let the facts prophesy for themselves; several will be heard in later chapters.

What have been the great hopes to which our predecessors clung in their misery and desperation, even as we are clinging now—to what? Were they let down by their lifebelts, their last hopes, as we or our children may be let down? Is anything to be learned from their recurrent disillusionments that may soften our own, if it is to come? These were the questions we explored, with what success must be left to any who care to follow us through to the end.

The top shelf of history is cluttered with discarded panaceas. It was out of the question to inspect all of these, or even any considerable number of them, and our choice finally settled on those great salvations to which, at some time or other, at least a third of the human race has clung, or to which it still clings.

Obviously first of these universal salvations is religion. But no man and woman on earth could hope to inspect all of the religions of the past, or even of the present, in two full working lifetimes. A severe selection was necessary, and we agreed on that religion which the majority of the white race has accepted for the past few centuries. Has any religion, not necessarily our own, given those who clung to it the benefits they hoped to receive? For our own religion the question is unanswerable this side of the grave, so we shall confine our inspection to what believers gained from their belief in this life and on this planet.

Always keeping that question about science as a potential salvation before us, we asked whether there is any fundamental distinction between the religious habit of mind and the scientific. And if there is, which has proved the better habit for the race as a whole? Such questions would puzzle a jury of Solomons, and we have not been brash enough to do anything more than to point out a few exhibits

which will at least, we hope, encourage some to ask their own questions. We are neither judges nor jury, merely a couple of guides through the Museum of Human Stupidity, in whose endless labyrinths we all appear to be lost at the moment. Once for all, neither of us has anything to sell, not even a picture postcard of the Mohammedan Heaven.

After religion, what other great lifebelt has buoyed up hundreds of millions for at least a decade or two? Again the answer stared us in the face, government. Since our brutish ancestors first deluded themselves into believing that they would be less liable to sudden death if organized into bands for mutual protection and plunder, the so-called art of government has been one of the perennial diversions of homo sap.

A cynic might say that in essence all government boils down to this: a select minority exploits, for its own selfish advantage, an unselect majority. The true "art" of government appears when the unselect majority is swindled into believing that it is getting that kind of government which brings about the greatest good of the greatest number. This art achieves its masterpiece when the select minority is convinced that 'the greatest good of the greatest number' is a collection of seven words without meaning, and, simultaneously, the unselect majority is convinced that these same seven words are the quintessential distillation of all eternal ideals. Under this comprehensive rubric are included such diverse manifestations of the art of government as the tyrannies of ancient Greece, the anarchy of modern Catalonia, democracy in Great Britain, the British Empire, France, and the United States, and whatever it may be that the happy peoples of Germany, Poland, Italy, Russia, and Japan imagine they are enjoying at this moment. Such is the cynical theory of government.

The cynical habit of mind—cynics call it the realistic—is dysgenic, we are told, and such may well be the fact. We shall see that nearly every other habit has landed our predecessors in assorted kinds of messes; so why not the cynical as well? Such being the apparent fact, Grace and I decided that the cynical theory of government is too comprehensive for practical purposes, and had better be left to minds less limited than our own.

All theories of government aside, it is a fact that societies are governed, and that one of the most widely advertised aims of many governments is to make our kind less crudely bestial—according to the high ethical standards of our present sweatshop, machine gun, gas, tank, and bombing plane era—than our arboreal ancestors were. And it is also a fact that hundreds of millions of desperate human beings are clinging to their respective models of government as their last hope in a sea of troubles. With these two facts before us; it was an easy matter to select the most buoyant of all the governmental lifebelts.

Judged by the amount of air it contains, democracy has no close competitor. As with religion, our concern in a later chapter with the democratic lifebelt will be merely to see whether this great belt has let its rescuees down and, if so, how far. As this particular inspection may incite some to hurl rude remarks at the inspectors, I state that both prefer the democratic form of government to any other on the market, or likely to be for a long time to come.

I should like to ask any who follow us through to our inspection of what we have called “the theory of want,” to note particularly how valiantly what President Roosevelt describes as “the peace-loving nations”—democracies—have striven to keep the peace. Whoever can view this uplifting spectacle without vertigo need have no fear that

his young sons and daughters will drag him with them when they topple into the abyss. But unless the spectator has a steady head in high places, he had better not look down, but cast his eyes up to the hills, from whence, as he has been assured on good authority, cometh his help. "How beautiful on the mountains are the feet of the messengers!"

4. TWO HABITS OF MIND

Strolling through the vast Museum of Human Stupidity, the casual tourist might expect to find the governmental lifebelts displayed in the same grand hall as the religious exhibits. Anyhow, Grace and I did. To a certain extent we were not disappointed. Government and religion formed a sort of trust in the Middle Ages, and by their united genius manufactured a belt that kept afloat for centuries. Accordingly, we report on this masterpiece before passing from the Hall of Human and Inhuman Religions, along that narrow corridor in which modern science was born, on our way to the Grand Salon of Governmental Inanity. For without a glance at the birth of modern science, it is impossible to appreciate the pickled monstrosities in any exhibit displaying the curios of centuries later than the Seventeenth. In passing, then, from the main religious exhibition to the governmental, we linger for quite a while in that narrow corridor between the Sixteenth and Seventeenth Centuries, where science as we now know it first drew breath. There, with what fortitude we can muster, we shall witness the terrible birth-struggle. Contrary to what usually happens in a difficult delivery, it was not the mother who all but died in giving the world a new life, but the father.

Here, for the first time, we shall see clearly, and without any shadow of equivocation, the first battles of a war in

which no truce is possible. Until one of the combatants in this struggle, now four centuries old, destroys the other, or until they succeed in killing one another, we can hope for no enduring peace.

The war is between two habits of mind, or two types of thinking. For want of better labels, we shall follow the curators and call these two the narrowly religious and the broadly scientific. The precise meaning of these terms, as used in the sequel, will be described presently. A particular mind need not cherish one of these habits to the exclusion of the other. The contrary is usually the case, and this marriage of incompatibles going on constantly inside our heads is a major contributing cause to profound muddlement in the conduct of our practical affairs. But it will be clear from the exhibits, we believe, that no lasting reconciliation between these two habits of mind in society as a whole is to be expected in any sense better than a quibble.

These two habits have been fighting for the mastery of mankind since the Sixteenth Century. Today, the war has reached a climax of ferocity, and we or our children, who are to be the spoils of victory, must huddle in helpless fear till one combatant exterminates the other and all its mercenaries. This, in brief, is the reason for our insistence on the narrowly religious aspect of many of the exhibits. Where there is also a scientific side, it is obvious enough and, as a matter of plain history, not nearly so frequent as the other.

Grace believes that the scientific habit of mind will be the victor, if only to the extent of being still in existence a thousand years hence. Here again we differ. Nothing more than a vague hope or uneasiness is possible under the circumstances, and what anyone predicts is likely to be only

a reflection of wishful thinking or temperamental caution. My tentative guess is that either the war will end in a "peace without victory," in which case the combatants and the spoils of victory will find a common grave on our capacious planet; or that the narrowly religious habit of mind (in the technical sense to be explained) will strangle the scientific in one last hairy embrace, and our descendants shall once more enjoy all the rights and privileges of the Middle Ages.

The labels "religious" and "scientific" are to be read without prejudice in the technical senses intended by the curators of the Museum. These will become increasingly self-evident as we view the exhibits. First, however, I must emphasize that neither of us is attempting to hold any particular creed up to shame. Least of all are we interested in "attacking" the creed in which we were reared. It survives, in spite of attacks. Hence, as an evolutionist would say, it is a plain fact that the official creed has "survival value." So also, for that matter, has war. It survives, but whether at its own expense or at that of the race is at least debatable. As this matter of not misinterpreting the labels "religious" and "scientific" is important for our whole inspection, I may be excused a little elaboration. This will remove any stumbling-block to an understanding of what we are doing, and prevent unjustified hard feelings.

The main point can be seen by anticipating slightly. In the next chapter, two widely accepted definitions of religion, a "broad" and a "narrow," are given. Under the broad definition, some men of science, but not many, would include science itself; for the kernel of the broad definition is religion as a way of life which conduces to the greatest good of ourselves, of our fellows, and of those

who are to come after us. Only the narrowly-religious quarrel with this definition. The narrow definition emphasizes the dogmatic creeds of sects. It is not possible to squeeze science into the narrow definition of religion. On the other hand, a great many blindly held beliefs that have proved disastrous for our race fall under the narrow definition, whose essence is an uncritical acceptance of what we are told is so by men no wiser than ourselves.

Whether a particular course of action or a specific theorem of social metaphysics comes under either definition of religion is a matter of traditional logic. For example, without stretching the broad definition of religion, it is possible to prove that much of classical economics, including the doctrine of *laissez faire*, is a broadly religious human activity. An ungarbled English equivalent of "*laissez faire*" is "Every man for himself."

The uninstructed layman might jump to the erroneous conclusion that *laissez faire* is slightly incompatible with certain of the principles enunciated in the Sermon on the Mount. The narrowly religious expert makes no such blunder. For, as we shall see when we meet him considerably farther on, the orthodox Malthus actually deduced the doctrine of *laissez faire* from the postulates of the Sermon. This brilliant achievement of the unaided human intellect was possible, and indeed logically correct, only because the classical logician was gifted with the narrowly religious habit of mind to the total exclusion of the scientific. So flawlessly perfect is this gem of the pure reason that it is displayed in a crystal cabinet by itself, with four policemen constantly on guard. If we can get by these four great beasts, we may be able to smash the crystal and make off with the gem.

Now, no scientific mind on earth would be capable of

such a feat of rigidly correct logic as the Malthusian masterpiece. A scientific mind would look about it, observe the economic facts, and base its conclusions on the facts alone, no matter what logic, reason, and all the doctors of economic theology from Manchester and London to Manhattan and Washington might assert *should* be so but simply is *not* so in fact.

This brings us to a brief recapitulation of some of the salient differences between the narrowly religious type of mind and the broadly scientific. History for the past four centuries offers many striking exhibits illustrating these differences. Especially is this the case for the more grisly specimens of human stupidity from the past century and a half, beginning with the efflorescence of democracy and the Industrial Revolution, and ending with the current applications to human affairs of practical psychology. These exhibits will claim much of our attention.

“When I was a child, I spake as a child, I understood as a child, I thought as a child: but when I became a man, I put away childish things.” In this optimistic confession, Saint Paul gives the meat of the distinction between the narrowly religious mind and the broadly scientific—provided, of course, that his “thinking man” was not lingering in the early morning twilight of infantilism. No doubt we never outgrow our childish terrors and impulses completely; but of the two minds, the scientific is the less woe-begone when it lacks a tender nurse or a strong, loving father to lean upon. Nature is its comfort, even when nature is most brutally ruthless. For the scientific mind quickly learns by observation and experience that accepting facts for what they are is less painful in the end than trying to dream them out of existence.

The narrowly religious type of mind escapes to a happy

cloudland of its own fantastic imagining, shuts its eyes to the everpresent miseries of this life, and refuses to meet nature, including human nature, on the terms which nature dictates and from which there is no escape, even through the ever-open door of mysticism. Deliberately choosing dreams instead of facts, the narrowly religious mind is so stupefied by its visions of impossible perfections, that it is incapable of any effective attempt to alleviate its own present distress or that of others, and often secretly regards all such attempts as trivially inconsequential. Such ineffectual efforts as it may make to soften material hardships almost invariably are foredoomed to failure, because they follow a course of action which is based on pure abstractions incapable of objective verification.

The narrowly religious type of mind retains all its life the uncritical faith in the barren logic and inherited reason which it parroted as a child, without once questioning whether any of this infantile magic has any relation whatever to the world of experience. Nourished on dogmas and disciplined in a dutiful reverence for authority, the narrowly religious mind remains that of an obedient child. The scientific mind is that of the unrepressed child who has grown up into a courageous, observant man, or sensible, unsuperstitious woman. By rude experience it has learned that wishful thinking but seldom accords with fact. It knows the value of logic and reason; but it knows also that both are worthless in any practical affair, unless the assumptions from which logic and reason proceed were abstracted in the first place from the world of experience, and not from the spectre of self-interest disguised as benevolence.

To the scientific mind, no less than to the religious, tradition is precious. But between the two minds there

is a radical distinction in their attitudes to the past. The narrowly religious mind discourages impartial scrutiny of its traditions, while the scientific invites and encourages constant testing and revaluations of all that it holds most firmly established. Any man at any time is welcomed who can upset an accepted scientific tradition convincingly. Whoever attempts to upset traditions dear to the narrowly religious temperament is in danger, not only of Hell-fire, but of the police or the military, which is much more serious. Even the tenderest inspection of the foundations of such traditions is likely to precipitate a total collapse of the superstructure. Built upon nothing humanly ascertainable, these essentially baseless traditions of superstitious folklore or swinish self-interest tremble at the slightest touch. But in the scientific tradition there is always, in any age, a residue of ascertained, verifiable fact, which has remained intact under the most hostile criticism.

Again, a "truth" once uttered in the narrowly religious tradition is a truth forever, whether the original utterer was a far-sighted humanitarian or merely a paranoid dictator. As Adolf Hitler has succinctly expressed it, "The only true loyalty is to *Absolute Values*, like God, People, Race, Honor, and to men who permanently personify these Values." In the practice of science there are no absolute values and no eternal abstract truths. What is known today, and is sufficient for today, may be modified beyond recognition or discarded as insufficient tomorrow. As man grows, science grows with him, to fit the constantly varying contours of his needs, both spiritual and material. Social tailors with the narrowly religious habit of mind would squeeze us all into straight-jackets of the same size and cut or, what is ultimately the same thing, make louts of us all and prank us out in loud uniforms. Either that or an indefinite vacation in jail.

Because their truths are abstract and, by decree, everlasting, the narrowly religious compel assent to their dogmas, and pull men apart on the rack, or burn them at the stake, or batter them into unrecognizable pulps, or herd whole nations of them to slaughter, for their own everlasting "good" and the greater glory of the supposedly eternal truth. Having no eternal abstract truths science offers no everlasting reward, even at the price of martyrdom; and having nothing to gain by any man's agony or death, tortures nobody and puts nobody to death for heresy. The narrowly religious temperament visions superlative excellences in a chosen race, or in an official creed, while the scientific, blinded by the facts of anthropology, is denied this supreme revelation. There is no "revealed wisdom" in science.

In its approach to the mysteries of government, the narrowly religious mind is humble and reverently obedient. It accepts what was good enough for its great grandfather with fluttering thanks and genuflexions, whether what it is offered is a New England boiled dinner and four yards of broadcloth, or half a handful of weevillyhardtack and a cast-off pair of pants with no seat.

In the matter of disturbing the peace, a prime function of government, apparently, the narrowly religious are the staunch bulwark of the State. "Theirs not to reason why, Theirs but to do and die"—for oafish incompetents stupider than themselves. Such at any rate was Saint Augustine's understanding of the sacred mystery of duty, as we shall see abundantly. In this connection it may be significant that nearly all the great military leaders of modern times have been devout adherents of rigid creeds. The spectacle of Marshal Foch kneeling every morning at early mass before issuing orders for the day's slaughter is worth a passing glance, as also is the singular alliance between the

ex-Kaiser of Germany and his sabre-rattling Gott. Among current manifestations of the same celestial mystery, the undoubted piety of General Francisco Franco and the worship of duty by the Son of Heaven—also known as the Emperor of Japan—are striking. A recent proclamation by the latter to his heroic and obedient soldiers and sailors upholds Saint Augustine's theory of righteousness as unquestioning obedience to the orders of one's superiors: "The soldier and sailor should highly value righteousness. Righteousness . . . implies the fulfilment of one's duty." This aspect of the religious temperament as opposed to the scientific probably finds its ultimate and perfect expression in the three-word slogan placarded over all the available walls in Italy, from cathedrals to public latrines, by Signor Mussolini: "Believe. Obey. Fight."

Contrasted with this unquestioning devotion of the religiously simple-minded, the scientific-minded cut but a sorry figure in the practical arts of government. For those practical arts, from the political pork-barrel to the muzzle of a sixteen-inch gun, are based on an uncritical acceptance of what we are told is so by men as stupid as ourselves, or stupider. None of those hoary arts, as practised rather than as depicted in storybooks for sub-normal children who never grow up, would withstand scientific examination. To survive, they must be accepted for what they are, incomprehensible revelations of a stupidity higher than ours.

It does not follow, of course, that all breeders of revolutions are scientific-minded. Rousseau, whom we shall meet later, for one, had an almost wholly religious mind in the narrowest sense possible, and this in spite of his undeniable love for his fellowmen when taken in the mass. Some of the most spectacular messes in history have been

Introduction. Prospect

piled up by rebels whose hearts were in the right places, but whose brains were God knows where.

Two recent statements of what science means to different minds may form a fitting tailpiece to what has been said. Both are by men who believe they understand the scientific habit of mind.

“Science is called Science just because it recognizes no fetishes, and does not fear to raise its hand against everything that is obsolete and dying, and attentively listens to the voice of Experience, of Practice.”

When that sentiment is lived up to, we have science as it is practiced by professional men of science. When it is flouted, we have something else. It was uttered by Josef V. Stalin. It is still quite possible to say one thing and do the opposite.

The next is from the address delivered by Cardinal Pacelli, Papal Secretary of State, who took the ailing Pope's place at the inauguration ceremonies of the resuscitated Pontifical Academy of Sciences, in Rome, on May 31, 1937.

“The mission [of an Academy of Sciences] . . . comes in all its effulgence out of that same divine source whence there pour out and descend to man the potent streams of the natural and rational sciences and the great river of revealed wisdom. Notwithstanding that the latter comes forth from deeper waters inaccessible to reason but not to Faith, and yet not less certain and true . . . All of nature is directed towards man, and the end of the motion of the skies, as says Saint Thomas Aquinas, points to man as the last end in the circle of things that can be generated and moved. But man in his turn is directed and formed in that image and similitude which marks him in the face of God, to that glory that the skies sing forever . . .” etc.

Remarkable as many of the Secretary's propositions

undoubtedly are, the most remarkable feature of his address is the appended date (May 31, 1937), not June 22, 1633, as might have been expected from the context. On that memorable day in 1633, some of the Secretary's illustrious predecessors had the pleasure of hearing Galileo, the father of modern science, deny the "glory that the skies sing forever." In fact, we shall almost trip over the apostate in the very act of his apostasy, as we pass along that narrow corridor from the Sixteenth Century to the Seventeenth where modern science was born. However, it is pleasing to be introduced thus early to Saint Thomas Aquinas; we shall see specimens of his handiwork nearly everywhere.

The Secretary's concluding theorem is not quite clear. If man is marked in the face of God, does it follow that a shouting dictator, who is a man, but who roars on occasion like an inspired gorilla, is "formed in that image and in that similitude"? Much of our difficulty in appraising the contributions of the religious-minded to civilization would be dissipated if we clearly understood this puzzling proposition.

5. BELTS FOR ONE AND ALL

Leaving this description of what we shall mean by the two habits of mind, I may note a few of the more spectacular exhibits which those who follow us may expect to see in our inspection of lifebelts.

After witnessing the butcheries attendant on the birth of modern science, we inspected an assortment of belts that hopeful young science had once offered our stupid race as potential lifesavers. Several of these are still afloat, more or less submerged; but what our race did to them in its massed incompetence and blind malice is a caution to all gods and an imperishable inspiration to future generations of moronic men.

There was scientific medicine, for instance. Only yesterday, as we shall see, some retarded idiot who just woke up after having slept soundly since the death of the last Puritan, seized this sanitary belt and all but ruined it in his clumsy attempts to use it for a wholly improper purpose. That is why it is temporarily in the Museum for repairs.

Then, more conspicuously displayed, are the remains of a gigantic belt, a sort of superbelt of superbelts, that was to have saved the entire human race, if not from drowning in its own copious sweat, then at least from breaking its too-patient back. This decaying memento of scientific optimism is labelled "Invention." To surpass the sheer fatuous ingenuity of some of the sabotages that have punctured and ripped this belt out of all resemblance to anything scientific, we should have to pray for guidance from another world. Deepest and longest of all the slashes are those inflicted by four inspired economists who escaped from their keepers in the late Eighteenth and early Nineteenth Centuries. Not only did these unscientific-minded paragons of the pure reason rip the belt outrageously in their rigidly logical frenzies, letting out all the necessary air, but they completed their destruction by ramming the tube solid with compacted masses of unadulterated metaphysics which resemble nothing sensible on earth. This stuffing is so unbelievably dense that we were forced to spend several hours trying to determine its exact composition. The result of our researches will be respectfully submitted to any who care to examine it.

To crown this economic disaster, the Proper Authorities, in charge of the Museum, have blessed the relic, declaring it to be sacred. They absolutely forbid any scientific mind to approach within a hundred feet of the hallowed shrine where the belt now wilts in all its faded glory, like a last

November Eleventh's wreath on a cenotaph. Consequently, the scientific mind cannot get close enough to the relic to see the graver damage and suggest repairs for getting the belt afloat again. As a matter of fact, however, the scientific mind, preoccupied as usual with its own fascinating business, seems to be in no hurry either to inspect or to suggest. In the meantime, impressive unscientific services by pontificating statesmen, stripped to their vari-colored shirts, or to their generous souls, as the case may be, keep the memory of the Invention alive in sweatshops and on battlefields.

Invention was to have materially civilized our grubby race. Instead, it precipitated the Industrial Revolution, and where there had been only one mess before the advent of scientific invention, a hundred festered and bubbled in response to its stimulus. Invention in fact made possible the Second Golden Age of human stupidity. We shall inspect as much of this as time and the jittery police will permit.

After invention, what other great belt has our race clung to? Education comes most readily to mind, especially as modern education and practical psychology were joined only in 1914 in one of the unholiest unions in all the long and varied history of fornication. We met their eldest child, little Miss Propaganda, an oversexed, feeble-minded girl with a harelip and a split palate, but a universal pet with the statesmen. She will be introduced to all who care to use her. This particular exhibit is almost too painful for calm description, and we do not linger over it.

Distressing as we found the last exhibit, we were forced to admit that it was no worse than an earlier one (duly reported in its proper place), commemorating the sanguine attempt to compound a new gas by sparking intelligence

through a mixture of science and mediaeval humanism. This foolhardy venture was undertaken by a small band of mystical and optimistic scientists who believed it possible to give the learned of today a faint glimmer of what science means. The resulting explosion blew the proto-belt to electrons (called "wavicles" by one of the optimists), and separated the intellectual stratum of society from its cerebrum, its cerebellum, and its medulla oblongata. Over twenty million minds were lost in this disaster alone. We inspect a few of the larger fragments of the original apparatus salvaged from the explosion.

We were finally ordered by the police to "cease and desist" in our inspection of the sacred relics. We sat down outside on the cold granite steps of the Museum, and, chastened by what we had seen, soberly asked ourselves once more the initial question that had inspired our tour: Is science likely to prove the lifebelt our race has been hoping to grasp all these disastrous centuries? If it is, has it the materials necessary to keep us afloat for more than five minutes? Or shall we, trusting to science, once more drown as our forefathers drowned in the illimitable ocean of bottomless bosh, believing that at last we have beheld the beatific vision? As we sat there, hugging our shaking knees to keep warm, we both shivered to the roots of our hair. For a moment we blamed the granite. Then we remembered. One of the exhibits, we recalled, showed a large slab of modern science slowly deliquescing into green mysticism. That awful memory was enough to turn anybody's blood to ice.

We trust that enough will have been shown to enable anyone who follows us through to the end to form his own opinion. Neither of us expects unanimity, for even we two are divided on some of the most important issues.

Anyway, we hope that all will enjoy the excursion into the past and present stupidity of our race as heartily as we did, and bear neither of us any ill-will for having occasionally called things by what seem to us their correct names.

Where such directions are likely to be helpful, brief prospectuses of what we shall inspect next have been given at the ends of the chapters.

Chapter II

THE LIFE BELT OF LIFEBELTS

Religion is the basis of society, and the source of all good and of all comfort.—BURKE.

Religion is the opiate of the people.—THE REV. CHARLES KINGSLEY; LENIN.

I. SKIN AND AIR

IN THE Eighteenth and early Nineteenth Centuries it was commonly believed that no race of human beings was so deeply sunk in savagery as to lack a religion of some sort. Explorers and anthropologists gradually dispelled this wishful error of pious Europeans, and more than one tribe without a shred of anything that could decently be called religion to conceal its naked soul was run to cover. These godless aborigines however were the rare exceptions that proved the rule. Without being too uncharitable it was possible to classify them as sub-human.

We shall take it as established that civilized man in all historic times and places has clung to some religion or other to preserve him from disaster here or hereafter. For the overwhelming majority of men, religion has been the life-belt of lifebelts, the last resource in a sea of dangers and the first aid to a better life. Our concern is to see whether it has sustained him in his trust or let him down.

An initial difficulty almost blocks the way at the outset. What is religion? The two testimonials quoted above,

Burke's and Lenin's, indicate that professed saviors of humanity can hold diametrically opposite opinions. One wrote in the Eighteenth Century, the other in the Twentieth. Time alone is not sufficient to account for the difference; equally violent disagreements can be exhibited, almost decade by decade, since the question was first asked. For definiteness before taking up the main question, we must have some convention as to what we are discussing. The intuitive religious feeling which most of us believe we experience is probably sufficient, but something more precise is desirable. Our intuitions may accommodate our own meanings and yet be too narrow for those of others whose religion differs from ours.

Innumerable definitions of religion have been given, each of them probably unacceptable to adherents of at least one creed. Some definitions are so broad as to include every human aspiration, others so narrow as to damn to everlasting perdition all who cannot believe that total immersion is the unique means of salvation. Between these extremes lies what the majority of believers have accepted. Perhaps the simplest way is to give one fairly mild definition of each type and let everyone find his own place between the two. By a curious historical irony, the first definition would make Lenin an extremely religious man, as will be evident after we have considered democracy as a lifebelt for drowning humanity. Burke's description also accords with the first definition, although he probably had the second at the back of his mind.

First, religion is a method of attaining good and avoiding evil. It is an openness of mind toward attainable good and an attempt to make that adjustment to life which will result in the greatest good to oneself, one's fellows, and those who are to come after us. Religion may, but need not, operate

in accordance with some accepted scheme of the universe, supposed true. On this definition, morality is not a part of religion, but an endeavor so to organize life that good shall be attained and evil avoided. The last, at least, fits more than one religion of the past or present in its permissible divorce between religion and morals. By our current western standards the most conspicuous feature of some religions other than our own is their unabashed immorality. Possibly that is why they are so attractive to their enthusiastic converts. For good measure, it is sometimes added that religion seeks a love that passeth all human understanding. This first definition is a fair approximation to Saint Augustine's idea of "true religion."

Some will find it strange that many religious people have quarrelled violently with the above rather nebulous definition, finding in it the first inextinguishable sparks of the everlasting bonfire. Others have clung so tenaciously to this definition, which they find concrete and satisfying, that they have suffered extremely unpleasant deaths rather than give it up. The deaths were usually inflicted by those who preferred the second definition.

The second definition is both less ambitious and more precise than the first. It is also closer to religion as it is practised rather than preached.

A religion is a trinity embracing an official Church, a definite set of beliefs, called a creed, and a code of rules of conduct, called morality. Different religions are distinguished by different Churches, or different creeds, or different codes of morals. Thus, in the Mormon Church, polygamy was once acceptable conduct, while the Roman Catholic and Episcopal Churches have always frowned on it even in the extremely diluted forms of adultery and divorce.

Those who dislike the second definition insist that it fails

to touch the spirit of "true religion." This brings us to the parting of the ways and the crux of practical importance for men in their search for lifebelts. Religion as a "method of attaining good and avoiding evil," strikes those accustomed to clear, verifiable statements about facts as so much air with nothing to contain it, like the contents of an inner tube without the tube, or the inside of a lifesaver without any skin. The "Church, creed, code of morals" definition, on the other hand, is all skin and no air. However, it is the outside of a lifesaver which the hasty passenger sees before plunging overboard. Nobody on a sinking ship would be foolish enough to yell for a lifesaver filled with bricks. In the excitement of the moment he might not pause to test the buoyancy of his saver: he would be almost certain to take the steward's word that the thing really was full of air. Once in the water he would find out quickly enough what to believe.

2. THE EVERLASTING "IF"

Suppose we find that a particular lifebelt has let the race down. Several courses are open to apologists desirous of maintaining public faith in what has been discredited by impartial fact. An apologist is one who, usually for selfish reasons, supports a discredited cause by specious arguments and appeals to prejudice. The easiest and in many ways the most effective "apology" is to accuse the discreditors of prejudice and ignorance. Since most of us dislike being shown up for dupes, it is easy to convince us that we have not been let down but are still afloat. Another device, frequently successful, is to insinuate that the seekers after facts are motivated by sinister designs on our pocket books or our immortal souls. Human nature being what it is, such insinuations are usually welcomed.

All such devices for inflating the deflated, however, are trivial in comparison with the everlasting "if." This insignificant word has the threefold advantage of being unanswerable, accusing, and subtly inciting to participation in further folly. We are told that *if* we had faithfully followed the precepts of this or that teacher, we should not now be in distress. *If* we had done other than we did, or *if* we had been capable of acting in defiance of our human instincts, everything would have worked to our good. Further, we have committed the unpardonable solecism of confusing the *teachings* with the *teacher*. One is all good; the other may be all bad. The fault is our own, and we have been let down lighter than we deserve. However, our judges are not unmerciful: they will parole us this time, provided we promise to follow the teachings we were incapable of following in the first place. Even before we have left the courtroom we know perfectly well that we shall stray again, and we may even look forward with pleasurable anticipations to the next free lecture on the attainment of the impossible.

To how many human beings does it occur that the fault may not be theirs but the impracticable teachings they are instructed to follow? What is the human value of an ideal which no human being has ever even distantly approached? Yet we continue to set up one abstraction after another as our goal, instead of using our senses to find out what we really desire and are capable of reaching.

The apologists are ready with the obvious, meaningless answer, meaningless because it is based on an infinite regression of "ifs": without an ideal beyond our human comprehension, our strivings are vain and futile; and every failure to reach the goal, although a failure, brings us closer. Closer to what, in the name of nonsense? They do not say,

and the "prisoners of hope" still tramp their lives away on the treadmill. A squirrel in a cage has more sense. It takes a rest occasionally.

It is the everlasting "if" which keeps discredited and dangerous "salvations" active in the human mass for decades or centuries after they are dead. Like the abscessed roots of a broken tooth which should have been pulled long ago, the remains of beliefs that may once have been good for the race but are now centuries or decades out of date, set up focal infections and breed disease in the most unexpected places, from the heart to the head.

3. COMFORT FOR THE COMFORTABLE

In the immediately following chapters we shall look at a few exhibits which the squeamish may not enjoy. There will be nothing morbid, and nothing more disgusting than an occasional bit of stupidity to shock our sensibilities. Some have weaker stomachs than others, and to avoid upsetting anyone, I shall put here the moral of the story. It should come at the end, of course; but putting it here will serve the double purpose of comforting those capable of assimilating comfort, and of suggesting to others a point well worth noting.

The reading habits of adults in the United States have been analyzed, in part by the Bureau of the Census (completely for 1933, 1935). This analysis offers a very substantial comfort to those who can take it. The circulation of religious journals was 45,000,000 annually. All the readers cannot have been farmers,— the circulation of agricultural journals was only 19,000,000. The circulation of "general" magazines, including the pulps, the *Ladies' Home Journal*, *Delineator*, *Cosmopolitan*, the *Saturday Evening Post*, the smuts, and other favorites, was 60,000,000, only one-

third more than religion. Science trailed with 3,400,000. In the last are included all the medical journals taken by doctors of medicine, but no Christian Science publications. The numerous highly technical journals serving engineers, physicists, mathematicians, chemists, biologists, and in fact the whole scientific fraternity are counted in the 3,400,000, as also are the scientific magazines for popular consumption, like *Nature Magazine* and the *Scientific Monthly*. There is an eloquence in these statistics that does its own shouting. Whoever alleges that the United States of America is going to the Devil may be confronted with these figures.

As if this were not comfort enough, the editor of a religious weekly summarizes the outlook for Christianity (he calls it "religion," but it is clear that he means the species, not the genus) in July, 1937. He is concerned with a comparison between the relative popularities of several religions (according to the definitions given previously), particularly Atheism, Communism, Fascism, and Christianity. His figures may be slightly distorted by a personal bias, especially as regards Mexico and Germany, but on the whole they are admitted as close enough by both the religious and the anti-religious.

The editor first recalls Voltaire's premature prophecy, uttered about 150 years ago during the French Revolution, that religion would be completely dead in a few years. Today French religion is lively enough to make "anticlericalism" a political issue. The abuses which Voltaire believed were the suicide of French religion are still active a century and a half after they were supposed to be dying.

Coming to the present, the editor next reminds us of Soviet Russia's recent campaign to extirpate religion from the life of the people. In September, 1936, the Atheistic League of the Soviet Union ruefully admitted that its at-

tempt to suppress the orthodox religion of Czarist Russia, all but a very small fraction of which was dominated by the Greek Orthodox Church, had ended in failure. The new paper constitution of Russia in November, 1936, removed the religious disabilities which had barred millions of conservative Russians from becoming citizens of the Communist State. In March, 1937, the Atheistic League discovered to its dismay that 30,000 churches were doing business as in the days of the Czar, and that fifty per cent of all Russians were still religious. The League takes comfort in the historical facts that the Revolution occurred in 1917, only nineteen years before the churches reopened, and that over fifty per cent of the population had been indoctrinated by the Greek Church in their childhood. The League confidently predicts a complete extinction of religion (not including its own, of course), within a few years, just as Voltaire did, when all this mature population shall have been "liquidated" by natural causes, or by the secret police for "wrecking."

However, one small, irreducible fact would seem to throw some doubt on this prediction. The young people themselves, with the tacit approval of their Communist leaders, recently excoriated a certain anti-religious opera because it was said to ridicule Russian traditions. Although the stupidity of accepting any political action at its face value is classical, this incident shows at least that something unthinkable in 1917 has actually happened. It may be due either to a genuine rebirth of pride in the historic past of a large country, or to a belief that indirection and subtle perversion are more effective with the masses than crude brute force and bluster. A great deal has been learned since 1917 about practical psychology. Some of this new knowledge will be considered in a later chapter.

So much for Russia. After centuries of increasing ecclesiastical efficiency, the Republic of Mexico a few years ago ousted the more influential members of the clergy and effectively muzzled the rest. Wholeheartedly endorsing Lenin's description of religion, the libertarian government launched a vigorous offensive against poverty, dirt, ignorance, illiteracy, and superstition among the vast mass of the population. Of Mexico's estimated sixteen millions, about thirteen millions are Indians. The schools for these "simple children" were wrenched loose from the protecting bosom of the Church and handed over to trained teachers familiar with the rudiments of sanitation. The parochial schools were abolished outright. While strictly private teaching of religion was discouraged but not actually forbidden, any form of public religious instruction was rigidly banned. Pointing to the economic and social backwardness of the mass of the population as sufficient proof of their charge, the Mexican leaders denounced religion as Public Enemy Number One of human welfare.

Exiled priests admit that some of the peons may have been undernourished, dirty, and unable to read, but point out that for four hundred years the clergy have supplied the last of these deficiencies by reading to their congregations all they should hear. They agree, on the whole, that without the kindly offices of the Church during the past four centuries, the thirteen million native Mexicans would have evolved into something quite different from what they now are. They urge therefore that these "untutored children" be restored to the bosom lately bereft of them. So far, the most vigorous attempts of foreign investors and clerical propagandists to effect the restoration by a Holy War, in which the United States is to be the champion of oppressed religion, have proved abortive. This failure is of

particular interest to us here, as will be seen when we discuss the theory of "want" and the modern applications of psychology. It is very difficult to account for it satisfactorily on any scientific basis. Finally, the exiles do not repudiate the charge of "material" undernourishment, but rightly insist that this was compensated by "spiritual nourishment." They point out that there is much truth in the theorem, ascribed (erroneously, I believe) to Saint Augustine: Undernourishment is better than none.

Recent reports from Mexico indicate an apparent drift back to conditions as they were before the involuntary exodus of the clergy. But the drift, according to impartial observers, is only apparent. Those thirteen million Indians are the alleged drifters. Now, an Indian dearly loves a gaudy spectacle. Poor devil, why shouldn't he? It is all he gets out of life beyond long hours and short rations. So the churches now are permitted to put on Sunday mass, and that is all. In particular, a cruel blow has been dealt the clergy in the abolition of the confessional. No religious teaching or other interference with the lives of the Indians is permitted. They are allowed to enjoy what has been called the "Santa Claus and Christmas tree" side of religion, and nothing more. But the Mexican libertarians have learned a lot. Since their first fine fury they have learned that a religious repression as thoroughgoing as they believed desirable may incur the righteous censure of foreign capital, precisely as Signor Mussolini learned that leaning on the Vatican was more comfortable than sitting on it. Hitler has still to learn his lesson.

That closes the account in Mexico up to the present. In Germany, the ludicrous attempt of that great but defeated military genius, Erich von Ludendorff, to oust the Jew Christ in favor of Wotan and other strictly Teutonic deities,

was too comic to succeed even with an Aryan people. Lastest bulletins announce a stiff resistance on the part of one singularly obstinate Christian pastor. The issue is still in doubt, but it seems unlikely that National Socialism will be the official religion of the German people a thousand years hence.

I see that I have forgotten to mention one particularly comforting item for the United States. The same editor announces that the reading of the Bible in the schools of Tennessee is now prescribed by the law of the State.

An encouraging feature of all these bulletins is the evidence they afford of something which the editor has apparently overlooked. When religion is attacked, all the sects which in time of religious peace are bickering with one another—to put it very mildly indeed—rush to the defense of that particular sect which is bearing the brunt of the attack. This is admirable, from any point of view. It shows that religion is thicker than something, although it might be difficult to say precisely what. The safety in numbers is proverbial; there is also a safety in distances, which may be respectfully brought to the attention of those who are sensitive about the company they keep.

All of these advances and retreats on the popular front show that religion is still a lifesaver for which drowning men will fight. We shall briefly examine its record, in Western civilization only, during the past few centuries.

Chapter III

THE CELESTIAL CITY

God will be . . . whatsoever is lawfully desired of men; life, health, food, abundance, glory, honor, peace, and all good things—SAINT AUGUSTINE (A.D. 426).

Watch and pray,
Live on hay,
You'll get pie in the sky when you die.—I. W. W. Marching Song (A.D. 1906).

I. A.D. 413 AND NOW

MUHAMMEDANS still believe that death in battle is a ticket of instant admission to a paradise of frozen sherbet and torrid chorus girls incapable of impairing their virginity, no matter what they undertake. We are not concerned with the existence or non-existence of the Mohammedan heaven, or any other. Our only interest here is the observable effect on the lives of men, on this Earth, of beliefs beyond the test of objective verification in this life. Such beliefs belong to the creeds of religion, certainly not to science, and their observable effects on the faithful may be fairly credited to religion.

In itself, a belief is neither good nor bad, except possibly as a matter of definition. Some would rate a belief beneficial if it furthers religion in the broad sense, that is, if it makes easier the attainment of "good" and the avoidance of "evil." Unfortunately, "good" and "evil" are nebulous terms, whose meanings may be assigned according to taste

or prejudice. Others insist that a belief is to be tolerated only if it accords with the official creed of some established church, almost invariably their own. This is the most frequent attitude, and it is the one responsible for most of the practical applications of religion to human affairs, including persecution.

The perfect specimen of religion for a dispassionate examination is the system crystallized in Europe during the Middle Ages. So far as Western civilization is concerned, religion as the dominant power over human life suffered a decline, still in progress, with the crash of the mediaeval Church. When, in the Tenth Century, the Church suffered its first mitosis and split into two, there was no stopping the division, and the process continued until no one church today is infallible to all religious people in the western hemisphere. With the dissolution of absolute authority, aspirants to the dictatorship came out of hiding, timidly at first, then aggressively. After long and bitter warfare, a truce by mutual consent was sullenly tolerated, and what was left of religious authority grudgingly divided the spoils of inconclusive battle with the strongest of its challengers, science.

The careers of religion and science, the latter itself now fast taking on the complexion of a religion, are inextricably interwoven. The weave becomes progressively closer down the past 350 years. To see the complicated pattern in its entirety is impossible, and first we must follow in broad outline the career of Western religion while European science was still an unwanted and sickly infant. Later, we shall return to the debate between science and religion, to prepare the stage for modern science as salvation.

By 413 A.D., when Saint Augustine at the age of fifty nine began composing his masterpiece, *The City of God*, the religion which was to govern Europeans for a thousand

years was already powerful enough to split empires and "put down the mighty from their seats." Since its hazardous youth some four centuries before, Christianity had proclaimed itself the champion of the poor and the oppressed. When Augustine gave the ambitious young religion its *Magna Carta* in his masterpiece, Christianity had indeed "exalted the humble and meek," some of them to sit as princes of the Church at the high table of political corruption. The manners of certain of these blustering parvenus were anything but humble and meek.

For thirteen years the indefatigable Saint toiled to perfect his vision of the celestial City. When he finished, Europe had set its face definitely toward Christianity and away from paganism. The civilization of Rome was to remain active for several centuries more, like the nerve of a once-sound but now rotten tooth; but Rome as the 'Eternal City' was thenceforth only a name. Pilgrims from Asia, Africa, and Europe might swarm in their verminous multitudes over the dilapidated capitol of the Caesars, but it was the Holy Father, not Caesar, whom they hailed and obeyed. The first "dictatorship of the proletariat," begun by a handful of illiterate zealots in the second-rate Roman colony of Palestine, was already well started toward an absolute despotism over the bodies and thoughts of men when Augustine began selling real estate in his "dear City of God" to a credulous mankind. That despotism was to last a thousand years. By command, alleged divine by the commanders, the rank and file were to forgo freedom of thought and action in this life, and for ten centuries were to endure ignorance, repression, cruelty, and poverty. They were taught, and believed, that robbery and exploitation on Earth are compensated by rococo riches and everlasting idleness in an incredible Heaven.

To this day the "City" of Saint Augustine is "prescribed reading" in hundreds of colleges throughout Christendom, as a preparation for a better life—but not here, on this Earth. Today, also, the latest "dictatorship of the proletariat" is being aborted by skilled obstetricians who know their profession as thoroughly as the followers of Augustine knew it. Yet a considerable mass of humanity believes that it is well on its way to temporal happiness, if not to the eternal bliss of a Heaven in which it no longer believes. Since social change and decay are greatly accelerated today as compared to the speed of the Fifth Century A.D., it may take less than a thousand years for the present believers to wake up and find that once more they have been dreaming.

One thing only remains constant in all the recurrent flux of credulity and disillusionment: against a cunning and skilled minority a confiding majority untrained by long practice in ruthless selfishness has less chance than a lamb against a lion. This tough lesson of history invariably evokes exclamations of shocked dismay from those who have profited, often unwittingly, by the very ruthlessness which lacerates their tender sensibilities.

Is the plight of the many hopeless? By no means, say the few. Education will induce the readjustments necessary for the widest spread of contentment over the greatest number, and the just balance between attainable good and unavoidable evil will be achieved.

As modern education cannot be divorced from psychology, further consideration of its possible benefits must be deferred till we come to science. For the moment we shall follow humbly behind Saint Augustine, and watch him preparing the way for the endless brawls between Church, State, and mere humanity engendered by his sublime vision of the City of God.

2. AUGUSTINIAN RIGHTEOUSNESS

Augustine himself was no doubt as sincere as it is possible for a Christian to be. All the stigmata of a great religious pioneer were his: acute repentance over what he regarded as a misspent youth, but which was not very exciting by modern standards; a "conversion" shortly before the age of thirty two, followed by public lamentations over the girls he had seduced; a poetic mysticism which vented itself in impassioned rhetoric; robust appetites; and last, an unshakeable conviction that he was everlastinglly right and therefore religiously bound to re-create mankind in his own image. A more earnest man never lived.

If anyone is to be credited with the protracted fiasco of the Middle Ages in Europe, it is not Augustine, but the less visionary men who followed him and translated his somewhat vague specifications for a City of God into a workable despotism.

The central strength of the Augustinian system was its systematic ambiguity. From this it was possible to devise self-contradictory philosophies, by the endless logic-chopping of scholasticism, which befuddled Europe for centuries. And it was also possible, by timely appeals to Augustine's mystical lack of precision, to keep Church and State in perpetual strife, each claiming in the name of the City of God the authority over the other. In all this the innocent—or stupid—bystander was ignored, except as a source of revenue. The principals played the game with the subservience of the multitude as the stakes.

We must now inspect more closely a few of the many mansions in Augustine's City of God. The complete work, twenty one "Books," is as thick as a Bible. Already in the first ten Books there is more than a hint of the casu-

istical hairsplitting of scholastic history, philosophy, and theology. The convert Augustine (he did not become a baptised Christian till he was thirty three) labors enormously to convince himself and all others that Alaric and his hardy Goths sacked Rome in 410 A.D. for loot, and not because the neglected pagan gods put them up to it.

This really was an essential detail if the theory of the concluding eleven Books was to command the assent of reasoning men. To have agreed with the Roman philosophers and lower classes that Rome fell because Jove, Venus, and Company were jealous of the upstart firm of Jehovah and Son, would have been to admit that the latter alone did not govern the City of God. Since not all aristocratic Romans were philosophers, and the lower classes were illiterate, Augustine's ingenious deflation of the gods was not heard where it might have done some good. The unregenerate persisted in believing that the Christian decree banning the worship of their gods, promulgated about thirty years before the sack, had summoned Alaric.

Milder instances of the same kind of reasoning grace our own generation. A notable example was the proclamation from several pulpits that the San Francisco Earthquake and Fire were sent as a rebuke to the ladies of the tenderloin for not having attended church as frequently as they might. If this was indeed the rationale of the earthquake, it is a miracle that the shake was not several degrees more severe than it was. Augustine also has some interesting remarks on earthquakes.

Having demolished the importance of the discredited gods for this life, the now limbered-up Saint finds it mere child's play to demonstrate the futility of worshipping them in the hope of gaining favors beyond the Styx. The logic of this masterly proof is both subtle and smashing. Augus-

tine's argument is so devastatingly convincing that it almost blasts the ground from under his feet when he takes up the main order of business, and essays to prove for the Christian pantheon what he has disproved for the pagan. The City of God is left, by this manoeuvre, hanging as it were in midair, which is precisely where Augustine intended it to hang—as far as possible above the lives of slaves, villeins, serfs, and the so-called common people in general. This celestial suspension will be visible in a moment or two.

Descending to mundane affairs, Augustine embroiders the otherworldliness of his social theories with wholesale borrowings from the philosophers of antiquity. Several of these had expatiated endlessly on "civic virtue," that deceptive lifebelt which floated the Spartans to their collective suicide and suggested similar voyages to the Athenians. Later models of this belt, inscribed with the names of the good ships *Patriotism* and *Nationalism*, have been picked up on the shores of every sea and ocean in the world, with the exception of the Dead Sea, which is too small for demonstrations in force.

The classical sociology, however, was too simple for Augustine, and he added ingenious complications of his own. The complete system is a four-shelled egg like a Chinese puzzle. Theologians, philosophers, kings, statesmen, priests, and popes amused themselves with this curious thing for a thousand years, taking it apart and putting it together again in all the possible and impossible permutations and combinations of its constituent parts. It kept them as busy as a kindergarten of monkeys with a barrel of mechanical toys.

This great egg of Augustine's was a masterpiece of specious precision and detailed ambiguity. Almost anything in it could be misunderstood according to self-interest in at least

two ways. The first of its four shells was "the Family" and all the slaves ministering to its needs and caprices. Enclosing this social germ was "the State," a mystical entity which in modern times has had an irresistible attraction for Teutonic connoisseurs of metaphysical abstractions. The State had originally been only the City, like the Rome of Romulus and Remus. The whole Earth and all its inhabitants obviously include all states and their families, so this was the third shell.

Euclidean space being not yet fully accounted for, Augustine added a fourth shell, the Universe, to include the Sun, the Moon, the planets, and all the stars then known, in his comprehensive Society. Today, a fifth shell would be a convenience, to prevent the spiral nebulae from oozing out of the Universe into the Greater Beyond, and the day after tomorrow a sixth shell may be demanded to conserve the clusters of spirals. These, however, are mere technical details which no doubt will be competently dealt with by scientific speculation, leaving the original fourfold egg intact. Enough mischief has been hatched from the original egg (without breaking any of its shells, such is the mystical cement of belief in the impossible), to keep human society busy for the present.

The fourth shell was the most important for submissive mankind in the Middle Ages. Anticipating the theory of relativity, Augustine had in fact added a fourth dimension to the banal three of vulgar space. His fourth shell included not only all the astronomical objects known to observation in his time, but a plethora of incorporeal beings, inaccessible to human observation in his day or in any later day down to our own. All the Hosts of Heaven, including God, his angels, and the souls of the blest, were assigned by Augustine to his fourth dimension, his City of God.

In passing, it may be remarked concerning the blest that Augustine, the first darling child of his sainted mother, was not unduly concerned over the fate of the "reprobate" damned, provided he himself was "saved." A similar solicitude for his own welfare and that of his particular "station" is evident in other mansions of the celestial City. Such are the usual rationalizations of the grown-up first child whose claim to the undivided affections of his parents was challenged by later additions to the family circle.

The delicate balance of such a social mechanism as Augustine's tremendous egg demanded expert juggling to keep its fragile shells in their proper places, and to prevent one from cracking and spilling its contents into another. The pundits of the Middle Ages juggled, expertly. Like nearly all subsequent jugglers with social hypotheses, the experts of the Middle Ages overlooked or deliberately ignored the one fact of cardinal importance for the human race: choose your assumptions suitably, and by unassailable logic you can prove anything you like. Decide first what you want to prove by pure reason alone, and then make your assumptions to fit the proof. Reverse your steps, being careful always to keep your logic and yourself between your assumptions and those whom you wish to browbeat by a show of reason into accepting your conclusions, and you can compel almost anyone to accept absurdities contradicted by brute facts.

For example, if you assume, as many do, that the Constitution of the United States of America was revealed in a dream or otherwise to the Founding Fathers by God Almighty, you can prove that all who hint that any amendment to the Constitution might be desirable are communistic atheists. Or again, if you assume, as many do, that Karl Marx was the greatest master of cold facts that

ever lived, you can demonstrate that all who believe the capitalistic system to be not utterly corrupt are low-grade imbeciles. The best results are obtained when, as in Augustine's masterpiece, the assumptions are beyond reach of any objective test by human beings in this life.

Liberal borrowings from the otherworldly idealism of Plato enabled Augustine to trick out his Christian social philosophy in the cereclothes of a civilization that had died of social bankruptcy. The transcendental Platonic realm of "eternal ideas" was transplanted after judicious pruning into Christian economy. "Righteousness" was the disembodied "idea" here behind the gross conduct of men. And what is righteousness? Not by any means that vague rumble associated with resounding Sunday sermons, but something—for once, in the nebulous City of God—quite hard and sharp. Righteousness is keeping humbly and strictly to that social "station" in which it has pleased God to plump you.¹ The lower the station, the deeper the humility necessary to retain it pleasingly to God, to say nothing of man. Instant and unquestioning obedience to the will of those called by God to social stations higher than your own is the first principle of righteousness. This is what "righteousness" means in Augustine's sociology.

Since the Middle Ages, the meaning of "righteousness" has been sadly debased in the minds of many. Centuries of moralizing by amiable pastors since Martin Luther rudely challenged Augustine, have deluded hundreds of millions into believing that righteousness and what little instinctive decency human beings may have as citizens of the animal democracy, are one and the same. They are not. A word

¹ "God bless the Duke and his relations
And keep us in our proper stations,"
as the old hymn put it.

whose implications the majority of men today would repudiate with scorn and contempt, if they understood what the word means, is foisted off on the multitude as the unabridged dictionary of all their aspirations. And, in the meantime, those who really understand the language continue to speak it in words of authority which would have been music to the ears of Saint Augustine and his more practical successors.

The implications of righteousness are many and obvious. A slave, for example, who dislikes being a slave, is unrighteous and hence liable to the wrath of God, to say nothing of the more immediate displeasure of his master with a stick in his hand. Again, servility, as the unrighteous would call it, is righteousness. So also, and most especially, is implicit obedience to a dictator, no matter how debased and brutal he may appear to the unrighteous. Soldiers, of course, owe an unquestioning obedience to their officers, who in turn must obey their superiors, and so on, up to the Commander in Chief who, as likely as not, is an incompetent blockhead with a strange reluctance to getting closer than thirty miles to the trenches. Consequently it is righteous for an army of men who know better to let themselves be machine-gunned wholesale, without a dog's chance, in a morass which their cautious Commander has never seen. In such circumstances it is righteous to "play the game." Whose game? But it is unrighteous to ask.

As an example of unrighteousness, we may instance the refusal to beat a defenceless man to a pulp when your animal instincts revolt at the order of your superior. Similarly, the rare aviator who feels squeamish about machine-gunning or bombing a mass of unarmed refugee women, children, and old men, is suffering one of the penalties of unrighteousness. He should feel humbly grateful that he is permitted to obey orders.

Augustine's ideal of righteousness is still as potent as it was in the 1840's-60's, when scores of Christian ministers of all denominations thundered in the name of God that slavery is a sanctified institution—as we saw, and thus did their bit to inflame hatred and precipitate the American Civil War. Among the most recent manifestations of righteousness, the striking demonstration in Spain, where one religion invoked the aid of Jesus Christ and his Virgin Mother to exterminate another, is noteworthy. Neither side, however, could justly claim a greater righteousness than the other, for both were obeying their higher commands, and therefore doing nothing more than their simple duty. Indeed, if the simile had occurred to Augustine, he, not Wordsworth, would have apostrophized duty as the "stern daughter of the voice of God." This uncompromising governess is frequently heard telling the dispossessed that it is wicked to covet the food and clothing they lack. And echo answers, "obey, obey, obey!"

It is not a question here of whether Augustine's ideal of "righteousness" is "right" or "wrong," "good" or "bad." To enquire whether it is any of these is to ask a nonsensical question. Our only interest is to see whether this specific kind of righteousness, which dominated Europe for ten centuries, and which dictates the working philosophy of many civilized societies today, is the brand that the ordinary man, demanding "righteousness" in human affairs, believes he is getting. Of course, if he asks for bread, he cannot fairly expect to be given cake. But is it really necessary to hand him an overdone brick?

Whole nations of dissatisfied customers are beginning to wonder whether the package was mislabelled in transit from the wholesaler to the retailer. And with their inveterate optimism they expect to receive what they pay for,

with their labor, mostly, when the dishonest retailer shall have been given a three-day sentence in jail. But when some swindling merchant does manage to get himself thrown into jail—or to the wolves—to put persistent questioners off the right track, the outraged customers are the first to protest. They point out that the poor man was only doing his duty, and for once in their misguided lives they are one hundred per cent right. The protest is often followed up by a plea for mercy on the culprit's behalf. Within a day or two he is back at the old stand doing business as usual.

Without righteousness, Augustine tells us, society would quickly disintegrate in brigandage and anarchy. Was the preventive for these disasters, which the majority did not want, an excess of "righteousness" enslaving the many for the profit of the few? Whether it was or not, that is how it worked out, and much of it was done in the name of God.

The protean lifebelt proved to be a rope which strangled those who clung to it. Once more, this consummation of righteousness was neither right nor wrong. It just happened. The conclusion of one of the Grimms' fragmentary fairy tales seems somehow an apt summary of the theory and practice of Augustinian righteousness: "And the frog flew over the mountain, which he had a perfect right to do."

3. AUGUSTINIAN JUSTICE

When the Viennese populace protested in 1927 at what it considered a miscarriage of justice, it marched on the stronghold of the law, chanting "Down with the prostitute Justice!" The crowd carried no arms. It was but natural that those who could not outrun the mounted police were trampled or shot down—in the name of justice.

This morning, an indignant believer in "justice" called my attention to a short paragraph in the local paper con-

cerning a recent atrocious sex-crime involving the murder of three little girls. Two suspects had been picked up by the police. The first was a transient who had been roaming about the country with only fifteen cents in his pocket. His alibi was checked by the police and he was turned loose. He had been several hundred miles from the scene of the crime when it was committed. His name and detailed description were published in full. The second suspect, residing in the city of the crime, was also freed after grilling. He was described only as "the scion of a wealthy family." His name was not mentioned, nor was any hint given of the identity of his "wealthy family." The difference between fifteen cents and wealth is obvious.

The same indignant believer reminded me of two recent episodes in the same community. A son of poor parents stole two gallons of gas for his liver from a parked car by the ingenious device of siphoning. The boy had no previous record with the police. He got five years in the penitentiary. Superficially his lapse looked like petty larceny, but the law got around appearances and arrived at whatever the truth may have been. His name and picture were published, also the address and occupation of his father, who happened to be a day-laborer. A few weeks later two boys, sons of "prominent and wealthy families," held up a gas station "for fun." When the attendant showed fight, the boy who was not at the wheel of the car took a shot at him, and punctured the cash register. The other boy stepped on the gas and the pair made their get-away, but not before the attendant recovered sufficiently from his beating to get their number. The same judge who gave the first boy five years turned the other two over to their parents with an injunction to go and sin no more. The learned jurist declared that the influence of a good home is the best

deterrent to crime. In this case also the names of the prominent families were not published.

These samples have been displayed to exhibit the prevalent confusion between what justice is, and what those who do not know what it is, think it is. To the rhetorical question, "Is there no justice in the world?" the reply is not the anticipated "No," but a most emphatic "Yes." There is a great deal of justice in the world. Justice is whatever those who have the authority to enforce existing laws or the power to put new laws into effect say that it is. It is a purely legal fiction without unambiguous issue in any practical affair.

How did the popular misconception of the meaning of justice arise? The whole story is too involved for telling here, so we shall confine our attention to that fundamental muddle of the Christian Fathers which was responsible for much of the confusion over "justice" in the Middle Ages. A full exposition of even this much would take us farther into Roman law and patristic theology than any moderate man would care to go. Accordingly, we shall give only the barest outline, but enough to suggest where the mediaeval Church got some of its authority over its subjects.

Augustine's reverence for Plato inspired the muddle. Once thoroughly inflated with Platonic idealism, Augustine easily did the rest, floating Heavenward through clouds of erroneous philology. One of Plato's dialogues contains a word which in his Greek means the ideal good of an entire society. This was Platonic "right"; whence, Plato's brand of "righteousness" meant the best attainable state of a whole society and all the individuals composing it. The closest Latin equivalent for Plato's word meant something more definite and quite different. Augustine got his Plato through a Latin translation. The Latin word has nothing

mystical or supernatural about it. It means a code of human laws that can be enforced by human judges.

Transfer this technical legal meaning to theological "righteousness," and hence to the City of God, and you get some remarkable consequences. It is "right," for instance, to ram the official religion down the stiffest neck in the community, and it is also "right," indeed "righteous," to make things in this life hotter than Hell for those whose opinions you dislike. The lustiest offspring of this obscene marriage between Roman law and the Christian religion was the Holy Inquisition, an institution which the un instructed layman might think somewhat inhumane, but which, nevertheless, was the very soul of "justice" made manifest to men.

Enough has been said about those twin lifebelts of the Middle Ages, righteousness and justice, to indicate that two conflicting interpretations of their human significance were possible to reasoning men. Trained intelligences, the proconsuls of the City of God, were well within their "rights" in imposing their will upon all backs weak enough to be bent but not broken outright by the imposition. Among other "rights" of the earthly delegates of God, was that of keeping the huge mass of mankind as ignorant and as superstitious as is humanly possible. This particular "right" enabled the few claiming it to convince the multitude that it was enjoying the mythical justice and righteousness of Augustine's more poetical flights.

One last Augustinian abstraction, and we shall pass on to a small sample of all these roseate ideals in action. Older readers will recall the great outburst of "service" in the early 1920's. Some may remember how the stomach of many a "servant" writhed at the mere mention of "service." The concept of "service" was cardinal in the

Augustinian sociology. By a simple feat of juggling with words, "love" became "service," which in its turn passed into "authority." Reasoning from the analogy of the family, Augustine deduced that all rule is necessarily a dictatorship of love, that the rulers are really the servants of the ruled, and that these "servants" are actuated by their duty to help and direct those in need of such services. This has almost a democratic or rotarian ring.

In practice it worked out in accordance with the greed and passions of the rulers, with an occasional humane ruler from time to time to relieve the monotony and lend credence to the general theory. The Ruler of rulers of course was the abstraction commonly called the "Loving Father." Augustine's psychology was the sentimentality of his wishful thinking. Modern psychology has somewhat tarnished the golden image of the "loving father," exhibiting the male parent as frequently a brutal tyrant making the lives of his children hell. It even goes farther, and ascribes to the early tyranny of the home the unconquerable hatred of many professional rebels for even the mildest cooperation necessary if society is not to founder in barbarism.

One application of recent psychology to the theory of the family might have enabled Augustine to account satisfactorily for the Devil. The good Saint was never quite at ease in that disturbing presence. The Devil, according to the psychologists, is often only a childhood memory of papa in one of his rages.

Chapter IV

MAN OVERBOARD!

God's in his Heaven, all's *right* with the world.—BROWNING.

I. THEN AND NOW

FOR all of a thousand years the peoples of Europe floundered about in deep water, spluttering with rage as some playful pope or sportive king shoved their heads under for a decade or two, but almost always gazing up at the mystical City which was to be their eternal home. No matter how great the inequality between their material prosperity and that of their spiritual masters, the masses believed without a shadow of doubt that the righteous would triumph—as indeed they did,—and that all would be equally rich or equally poor in the City of God. There was little sense in getting excited about a mere scarcity of bread and a superabundance of vermin, when these inconveniences were to be compensated in full the day after tomorrow by a golden crown and feasting, accompanied by plain-song, forever and ever.

This is what the majority believed they should receive. What did they get? Nobody can say definitely that they are not now wearing their golden crowns and feasting like Belshazzar, but it has not been ascertained that they are. Nor has it been ascertained that “the reprobate,” pre-destined to an eternal hot bath of brimstone, are not enjoying what they were promised by the fathers. If they are, some of them may find their present state a welcome relaxation

after a shivering lifetime of scantily-clad servitude. A good priest was complaining only yesterday of the great difficulty he had experienced in trying to keep the native Alaskans from praying to go to Hell when they die. Of course it can be argued that in either case the social contract—for all that any mortal knows to the contrary—was fulfilled to the last letter. The laborer, having proved himself worthy or unworthy of his hire, as the case might be, duly received his just wages for toiling in his master's vineyard.

It can also be argued that without a Celestial City to look forward to, life would have been insupportable and the suicide rate uneconomically high. Faith kept the serf moving when he would have gladly laid down his burden. He was probably better off believing than not believing, say the apologists.

Against all such speculations is the historical fact that life on this Earth became a thing of trivial moment to thirty generations of men, because they believed in an ideal life beyond the grave where all their misery would be rewarded with eternal happiness. This was their unalterable conviction, more real to them than all the "appearances of this world." Their lives were regulated by orders from a "higher" world enforced by the powerful in this. Whatever may have been their reward elsewhere, it is the fact that their lives here were often not fit for decent beasts to live. To that extent, at least, their faith let them down.

The statistics reported in an earlier chapter regarding the churches in Russia and elsewhere might seem to indicate that vast masses of human beings are still living in the Middle Ages. But this is true only superficially. An occasional society of fanatics may be as superstitious as their ancestors were eight centuries ago, but the great mass does not believe with its viscera what it confesses with its lips.

Fear of the Devil still causes widespread uneasiness in Christian countries where the educational authority of the clergy has not yet been curbed or only recently broken. But it is a mild sort of distress, not comparable to that in the Middle Ages. Effective belief in a supernatural system of penalties and rewards is dead, and has been for at least a century. Human beings today, no matter how meagre their education, cannot be wheedled into poverty by smiling promises of riches after they are rotten, nor can they be terrified into slavery by threats of eternal punishment for failing to do their "duty." Occasionally some not-too-bright brother may be inclined to lend an ear to the seducers of common sense, but he is quickly laughed back into line—unless, of course, he is one of those who have already gone off the deep end.

It is preposterous for anyone to claim that any considerable percentage of devout, practising religionists believe what they profess to believe strongly enough to affect their daily lives in any socially significant way, as the men of the Middle Ages believed. So in letting its adherents down in this life, as religion did in the Middle Ages, it may have let itself down not only in this life but in the next, of its own creation, as well.

None of this is intended to refer to that select minority who find no inconsistency in praising the Lord on Sunday and swindling their neighbor on Monday. Such aristocrats of piety are often among the most public-spirited members of the community. Their social importance is considerable, but not enough to contribute any major stench to the grand process of religious decay.

The economic behaviour of the masses is the important thing. They simply do not believe as their forefathers believed, and it is doubtful whether they can ever be brought

back to an economically healthy fear of God and an even healthier fear of the Devil. A foreman in a steel mill who sought to spur some lazy devil to greater effort by threatening him with hell-fire unless he got on with the job, would be told to go to Hell himself. And neither the foreman nor the loafer would mean a word of what he said. The bellowings of the papal bulls excoriating their thousands for the sins of idleness and sloth have become the short and simple cusswords of the poor.

Have the masses then no religion in which they believe with all their heart, with all their soul, and with all their mind, as their forefathers believed? Indeed they have. Several. These are the newer models of the great lifebelt which sank to the bottom of eternity when the Mediaeval Church went down. We shall glance at some of these later; for the present it will be amusing to follow from afar the corruption of that City of God which was to have been the salvation of mankind.

2. ORIGIN OF EUROPEAN CIVILIZATION

At any time in a given society there are two great spoils to be fought for, the means of subsistence, and knowledge. Whoever controls the first will rule the people. But to gain control of material wealth, knowledge is necessary. It is therefore essential to command knowledge—military, political, economic, scientific—in order to govern despotically. In the earlier Middle Ages the regulation of knowledge offered no serious obstacle to the Church, because there was not much to regulate. Successive waves of barbarians had all but washed out the beginnings of dependable knowledge bequeathed by antiquity to decadent Rome, and the Church was free to make a fresh start, which it did. This ecclesiastical “knowledge”—perhaps more

properly "wisdom"—worked admirably for a few centuries, until puzzled observers of nature began to suspect that much of it was sheer nonsense. Thereafter the Church shifted its position and fought with every weapon at its command to retain its fast-vanishing authority as the dictator of thought. With all but supernatural clarity of vision it saw that a defeat in the sector of knowledge would necessitate a retreat along the whole line. But this disaster did not happen till almost the end of the Middle Ages, and the Church had a good thousand years to show what it could do for humanity when its authority was not seriously challenged.

After the retreat began, the debate over "the pen and sword" raged furiously between other disputants to the title resigned by the Church. The question of which was the mightier, the pen or the sword, was not settled till Signor Mussolini, demonstrating in the ancient city of the Caesars and the popes, proved that castor oil is mightier than either.

Being relieved by the Germanic barbarians of any necessity to fight knowledge, the early Church girded up its loins to civilize the barbarians and convert them to Christianity. If it did not always attain the first of these objectives, it frequently reached the second and indeed surged far beyond it. There was, for instance, the celebrated conversion of Clovis.

This rugged individualist, famed for his barbaric ruthlessness in an age when war was war and few prisoners were taken, was the fond possessor of a Christian wife. The poor woman could do nothing with him; Clovis simply would not swallow the story of the virgin birth. However, finding himself hard pressed (A. D. 496) in his battle of battles against other barbarians, Clovis called aloud upon

Jesus Christ for assistance, promising to be baptized in return for victory. He won, kept his promise, and was washed clean of filth, vermin, and sin along with 3,000 of his best.

Now, by almost any standard in almost any age, Clovis would be rated a brutal and unscrupulous blackguard, and most unbiased historians so rate him. Yet, in the great Bishop Gregory's *Annals of the Franks*, Clovis is whitewashed from his bloody feet to his cow-horned head, and is praised in angelic rhapsodies as the "chosen instrument of God" for the preservation and propagation of Christianity. Truly, "God moves in a mysterious way his wonders to perform." Clovis was only too eager to expend his God-given talents for slaughter and rapine in the service of the Church. But Clovis has been dead a long time.

By a curious historical anticipation, Clovis made the greatest hit of his unregenerated days in the region of the Somme. Some 1,500 years later, devoted padres sped the youngsters over the top at the battle of the Somme with the comforting assurance: "Have no fear my boys; Christ is your captain!" Is Clovis dead?

By the Eighth Century the "barbarians" were assimilated. They settled down then, and a little later in what was technically called "the Peace of God," to breed the present population of Europe. To curb the warlike proclivities of the contumacious barons, who insisted on a fair division of the available loot between Church and State, something drastic had to be done quickly. With commendable efficiency, the Church instituted this strange "Peace." Under the peace, excommunication was the penalty for plundering a merchant, mistreating a woman other than a wife or daughter—the loving father being still the "ruler" of the Augustinian family, or paddling a priest. If you

were still excommunicated when you died, you went straight as an arrow to Hell. The slaves, serfs, villeins, and others low enough to do any hard work, were still fair game for both the barons and the clergy. The open season lasted from May 31 of any year to June 1 of the next.

Historians assert that the Church civilized both the barbarians and the barons. Without the civilizing influences of the Church, the barbarians would not have learned to live in communities. The Church forced these semi-savages to get along with one another. In short, Europe was civilized by the Church. To the uninstructed observer, however, who sees things as they are and not as they are said to be for the purposes of propaganda, this sweeping claim seems premature. What, precisely, is the evidence that the peoples of Europe, descendants of these successfully Christianized barbarians, are civilized today? They live in communities, it is true. The unrighteous might assert that "civilization" is defined to mean one thing for the civilizers and another for the civilized, who believe what they are told. By definition, then, it follows that the civilization of the early Middle Ages was as advanced as that of the Twentieth Century. There can be no resonable doubt of this, on the religious side at least. But there is one salient difference between the two civilizations, and that difference is modern science. Later it will be seen how science has furthered civilization.

3. BENEFICIARIES OF RIGHTEOUSNESS

Castles and cathedrals, hundreds if not thousands of insipid paintings of the Madonna, of the crucifixion and of all the saints, illuminated missals and "books of hours," romances of roses and tales of chivalry, monasticism and "indulgences," all these things and many more like them,

made life worth living to those who liked living the sort of life such things suggest. Even to this day, tourists staring in awe at the magnificent acres of architecture constituting St. Peter's in Rome, or gazing rapturously at the mossy outside of some mediaeval robber's stronghold on the Rhine, sigh for the return of those romantic days "when knighthood was in flower," and the lower classes dutifully filled the station to which it had pleased God to call them.

A stroll through any of the better preserved monasteries of the later period, or an uncensored tour round the precincts of a great cathedral, almost makes the harassed leader of today sigh for a return of the splendid middle centuries, when there was no public press to enquire how many mistresses kept you or how often you got drunk. In those lusty later days of "damn or be damned," you drank like a whale, plundered like a Christian, and whored like a man. You could do all of these things consistently—if you happened to belong to the right set. If your physique was not quite what it might have been, you could take things easier and illuminate a prayer book, sitting down. Whichever way you took it, it was a good life.

Some monks in nearly every epoch were great men by any civilized standard. Others were not. Many were congenital loafers, too lazy to earn their own livings like men among other men. The most important thing about the monasteries for the mass of the people was this: here was a privileged class, the untouchables of God, who did not have some feudal lord on their backs twenty four hours a day. Whereas the villein acquired his callouses by tilling his owner's field all hours of the day and far into the night in all weathers, the jovial monk got the healthy firmness of his hands by working, under the benevolent supervision of

his abbot, no longer than was good for his spiritual and bodily health. When the villein tilled the strip of land allotted him for his own sustenance by his lord, he shared the crop with his lord. The monk shared his with his brother monks, and as there were enough monks per monastery to raise the crops without breaking any backs, they lived pretty well. They even originated improvements to lighten the labors of gardening, and lived better than ever.

The monks, of course, could not marry. In this respect the villeins were somewhat freer. With the consent of their lord they could marry. Their wives and daughters repaid this generosity by donating their services to the lord's household, weaving, brewing, sewing, washing, and cooking for the lord and all his retainers, and even tinkering damaged armor in the brief interludes between raids for plunder. To the downtrodden mass of men and women sweating their lives away for the comparative luxury of others, the "poverty, chastity, and obedience" of the monks looked like a dream of Heaven.

No reasonable person would hold the Church entirely responsible—if at all—for this state of affairs. Responsibility, however, is not the point. The dispossessed put up with their servitude because they believed it their Christian duty to obey their lords. Once more, the question is: what did they get out of it? Did their lifebelt let them down, or did it not? Anticipating a future bliss, they endured a very present misery all their lives. The Church saw nothing questionable in all this. Professedly, the Church was not concerned with the temporal comfort of its subjects, but with their eternal welfare. For once in history, government was imposed with the consent of the governed—because dread of an idiots' Hell had dried up their last drop of animal intelligence.

At first the lot of the monks was not particularly enviable. Convinced of the infinite desirability of salvation and the equally infinite undesirability of eternal damnation, they sacrificed their lives to an unceasing round of "penitence" in a state barely distinguishable from bestiality. This is what their religion did for them.

The holy man has usually been an object of gaping reverence to the less holy, who supply the idle saint with free food and clothing enough to keep his immortal soul in his mortal body for many, many years. Thus the institution of monkhood continued to flourish after the first half-crazy fanatics expired in their holes, and less ascetic men in greater numbers perpetuated the good work in more comfortable quarters.

When the barbarians first arrived to be civilized, it had been easy for the dispensers of civilization to cram the superstitious heads of their converts with the topography of Heaven and Hell. The joke was on the barbarians: migrating south in search of a warm climate, they got Hell. Thereafter they were the slaves of the Church.

The descendants of these terrified barbarians became the feudal lords and kings of Europe. No matter how ardently some rapacious baron might long to cut loose from the apron strings of mother Church and have an uproariously good time murdering, raping, and pillaging for his own sport alone, he was always sharply pulled back into the larger family by his watchful bishop. When the eyes of his nurse were diplomatically averted for a moment or two, some naughty boy would have his fun. To her consternation, his shocked guardian would discover on noticing the boy again that he was simply wallowing in forbidden fruit. "Have an apple, nurse?" the innocent would invite, remembering how fond Eve had been of that juicy sin.

"Thank you, Galahad. It is all right if you give it to me, because all the orchards are really mine. Only, you must ask my permission before you climb any more trees. You might fall and break your neck and my heart. And I must remind you again, Galahad, that if you don't obey me, you will go to Hell." And so another generous parcel of the choicest land in Europe was seized for the City of God, to become the site of yet one more prosperous monastery.

These monastic foci of holiness and security from the tribulations of a sinful world multiplied over the face of Europe like colonies of bacteria on a rich broth at the optimum temperature, or fungi on moist cheese. They thrived exceedingly and waxed fat in lands, substantial buildings, and such learning as was not in conflict with their economic immunities. Some of them prospered so excessively that the walls of their monasteries could no longer contain the ever-swelling mass, and germs or spores were ejected in all directions over the countryside. Presently the landscape was crawling with mendicant friars and other sanctified claimants to exemption from work, and the burden of those who did work for their masters' living became all but intolerable.

4. ALLIANCES, HOLY AND OTHER

The Church deemed it all very meet and proper that the actual producers of food, furniture, clothing, shelter, and arms should live in hovels unfit for clean cattle, and receive as their only wages enough of the necessities of life to prevent a premature departure of the soul from the body. To have permitted the laborer to receive his promised reward before he had sweated out the last ounce of labor out of him, would have been to traverse ecclesiastical justice. Naturally, so profitable a theory of the law was

not disputed by the lords till the Church attempted to collect from them too. But protest was never very loud so long as half an ounce more could be wrung from the producers, and the lords paid their tithes. It was agreed that cooperation is the first principle of exploitation: when two classes in a society are of comparable strengths, and there is available a third class, poorer in the means of self-defence than either of the others, the first two must reconcile their common differences—at least temporarily—if they are to profit by the weakness of the third.

In mediaeval society, the Church and the lords, the latter including what would now be called the military, combined to plunder labor and trade, until trade grew too sturdy for indiscriminate robbery, when labor alone had the honor of working for its bare subsistence. For it *was* an honor to serve one's betters like a galley slave in those happy days of simple faith. They believed that

“Kind hearts are more than coronets,
And simple faith than Norman blood.”

In later societies, trade and labor have combined against the nobility, trade and the nobility against labor, but never labor and the nobility against anything. There have also been alliances of the clergy and the military against whichever one of trade, the nobility, or labor happened at the moment to be worth plundering. Several such holy alliances graced the Middle Ages, for example the crusades.

Whatever they may have been in the beginning, the crusades in the Twelfth and Thirteenth Centuries developed into alliances between the clergy and the military for purposes of plunder. Organized by ecclesiastical propagandists to distract attention from pestilence, famine, and misrule at home, these romantic campaigns to wrest the

sepulchre of Christ from the "infidels"—Mohammedans for the most part,—quickly became raids in the interest of foreign trade. Commerce and the perfection of the art of war thrust the Holy Sepulchre into the background, although the Christian knights redeemed their vow and captured the Holy City of Jerusalem. This victory over the infidels is a highwater mark of uncompromising barbarity. Not to be outdone by the infidels in anything, the chivalrous knights treated their vanquished foes to a massacre that *was* a massacre. Here we have a typical example of the distinction between chivalry in theory and chivalry in practice. For the rest, the alliance between the cross and the sword followed the classical pattern of pillage, rapine, and stupidity. If the gospel was not noticeably spread, disease was.

However, the crusades did accomplish one thing that might be considered "good" without any quibble: they taught the semi-barbarous Christians of the Middle Ages that such a thing as a civilization might be possible. Even the greater blockheads among the knights recognized the superiority of the infidel culture, and envied the material blessings of the damned. Thereafter the Church had harder going with its Hell and its Heaven.

More recent holy alliances, some in our own times, have made similar ecclesiastical history in Peru, Mexico, and Spain.

Distrusting all alliances, labor in the Twentieth Century has attempted to fight single-handed against the clergy, trade, the military, and the nobility, with the issue still in doubt. With the exception of an abortive attempt in Palestine some 2,000 years ago under the leadership of Jesus Christ, there seems to be no record of an alliance between labor and religion.

Those with a propensity for clutching at lifesavers are already reaching for an alliance of the entire human race against poverty, disease, dirt, ignorance, greed, hatred, superstition, and selfishness. Of the several models offered by the manufacturers, those labelled "science" and "internationalism" appear to be the most attractive to many.

History is about to repeat itself. After the collapse of ecclesiastical despotism, largely the result of its own internal corruption, Francis Bacon in the Sixteenth Century looked forward with confidence to a golden age of material and spiritual prosperity such as the world had never dreamed. He was so far-sighted that he overlooked the industrial revolution for which his scientific successors were largely responsible.

A sort of internationalism has also been tried already and found full of holes. This is in fact the very lifesaver we have been inspecting. The Christian religion at one time was to have transcended all allegiances to kings and nations. To a certain extent it did and still does. In a narrow sense, the Roman Catholic Church is an instance. This Church puts duty to the City of God before duty to any temporal society. In a broad sense, Christianity claims precedence over other contestants for human allegiance, although many Christian sects prescribe obedience to lawfully constituted rulers as a Christian duty. Thus it is logical for a Christian clergyman to take as the text for a sermon Christ's metaphor, "I come not to send peace, but a sword," in order to overcome the animal reluctance which healthy young Christian males have been taught, as Christians, to have against slaughtering other healthy young Christian males with a brutal ferocity that would have appalled the Huns.

The last is a modern variant of the closest of all mediaeval

alliances, that between brutality and sentimentality. The same alliance is evident in Europe today. In the Middle Ages this alliance was called chivalry. We have glanced at the "Peace of God," and we have noted chivalry in action at the fall of Jerusalem. Chivalry can be traced back at least to a natural outgrowth of the "Peace," that casuistical attempt of Mother Church to legalize the homicidal tendencies of her obstreperous brats. This outgrowth was the "Truce of God." The kings fought the barons incessantly, the barons fought one another, and for centuries war was the major industry of the "upper" classes. In fact they showed no inclination toward industry of any other sort.

"Who goeth a warfare any time at his own charges?" as Paul pertinently asks in his first Epistle to the Corinthians. Nobody. Always and everlastinglly the mass of the people paid for the manly sport of those whom it had pleased God to place in the higher brackets of society. They paid with everything they had, namely, their lives. Once, when this source of lordly revenue showed alarming signs of drying up, about the Tenth Century, owing to widespread famine consequent on the epidemic wars, the good people of France did their duty and resorted to cannibalism. But obviously this sort of perpetual motion, like any other, was foredoomed by the facts of nature to failure. The situation was saved by the Church.

Slightly modifying the Ten Commandments, the Church combined the fourth and sixth, and decreed that "Thou shalt do no murder on the seventh day, the Sabbath of the Lord thy God." On the remaining six days of the week, industry proceeded as usual. A good rest on Sunday, with possibly a short spell in the confessional to close up the account for the past week and obtain spiritual guidance for

the week ahead, refreshed the weary nobles for their mission of keeping the common people in their proper station. Such was the "Truce of God."

Undoubtedly the Truce was a step in the "right" direction. Finding that it worked satisfactorily, the Church gradually extended the Truce from one day to several, until finally there were definitely closed seasons during which it was wicked and unlawful to do any hunting of human beings at all. The open season for private brawls between murderous lords was fixed at about three months. During the remaining nine months of the year, the knightly lords kept themselves fit by knocking one another off broad-backed horses with long poles, called lances, in one-ring circuses, called tournaments. Cavorting round the country to "rescue" adolescent girls perishing for the facts of life also helped to pass the duller months fairly agreeably.

Thus two of the strongest of human instincts, self-preservation and the propagation of the species, were fused into the sentimental ideal of chivalry, which had nothing whatever to do with the facts of anything. Love was sentimentalized out of all semblance to its biologic reality. More disastrously for the preservation of the race in a state of reasonable security, legalized killing became one of the noblest duties of a Christian gentleman. It is still a Christian duty, although recent doubts here and there have begun to cloud the bright shield of chivalry, and a few temperate souls decline to be fuddled longer by the stale lees of the great mediaeval debauch.

In extenuation of this chivalrous policy of the clergy, apologists bellow that without the holy alliance between sentimentality and brutality, men would have been more ferocious barbarians than they actually were. This is the everlasting "if" again. It is unanswerable. Moreover, we

are admonished to evaluate chivalry in terms of its own age. Very well; let us do so.

Chivalry was the substitution of an imaginary code of human conduct for a reality to which it bore no earthly resemblance. Once more the Augustinian mystery of the Loving Father rewarding believers with life everlasting or eternal damnation according to his holy caprice, was made manifest in the fiction of a barbarous society ruled by love. The deluded simpletons participating in this farce were doing their muddled best to reconcile the irreconcilable contradictions between Christian theory, as expounded in the gospels they were bludgeoned into believing, and Christian practice as they saw it in action all about them.

How, for example, could certain very explicit passages in the gospels be squared with the ruthless exploitation of the defenceless poor? Or how plaster the Christian virtues of poverty, temperance, and chastity over the open licentiousness and unbridled luxury of the higher clergy, to say nothing of the lower? Were the constant brawls over the division of plunder between Church and State the correct interpretation of the injunction "Love one another"? And were the thunders of the clergy, roaring at the merchant class for its deadly sin of "cupidity," just so much noise to distract attention from the colossal wealth of the Church? Abandoning these sacred mysteries to the scholastics and the theologians, who could fry fish in ice and freeze mutton-fat in fire, the somewhat thick-headed knights reconciled themselves in chivalry. Everybody was satisfied.

The chronicles of chivalry make luscious reading for the unrighteous. A tootle of trumpets, followed by a fanfare of mystical nonsense in praise of the pure white spirit of chivalry, is the prelude to some particularly revolting chronicle of all the misdemeanors in the Christian calendar

from arson and rape to murder and treason. Fractures in the virtue and piety which were the theoretical strength of the true knight's life are attributed, quite reasonably, to the inelasticity of man's soul in the indecisive tug of war between God and the Devil.

Everything in chivalry is referred, directly or indirectly, to the Kingdom of Heaven. Christ himself is canned in shining armor, mounted on a white charger as broad as a barn, handed a lance of superlative heft, and cheered on to joust with the Devil. The Perfect Knight of course unhorses his sooty antagonist, but not until three lances, deeply symbolical of something highly important, although God alone knows what, have been splintered against the stove-lid of Hell which the Devil carries as his shield. Seeing nothing incongruous or sacrilegious in his true history of this joust of jousts, the veracious chronicler goes on to state that among the ladies present at the tournament were Venus and the Virgin Mary, who showered the victor with roses or with articles of clothing, as the case might be. Bleeding great gouts of soot, the poor unvictorious Devil is roped to the tail of the victor's charger and dragged ignominiously from the field.

However, all is not as final as it appears. To caution us that the Devil is up to his usual tricks and is only shamming dead, the chronicler announces a return engagement for the following Sunday between the hours of low and high mass. Optimistically enough, he predicts that the championship of the world will be settled once for all at the next encounter between the White and Black Knights. It all has the crazy consistency of a dream. For obvious reasons the Devil could not be held for ransom, as was the usual custom. Even the chronicler has to admit that the Devil is beyond redemption.

From this more virile side of chivalry, succeeding generations of professional heroes and recruiting sergeants derived one of their most alluring baits for the gullible. Before exhibiting an authentic sample of this bait, I must emphasize that I did not compound the stuff, although I believe it to be very good bait, almost certain to land game-fish or suckers wherever it is given a fair trial. My only doubt about the bait is that it may not be exactly fair to dangle it before fish today, since it is well known that there has been a steady decline in piscine intelligence during the past quarter of a century. What sport is there in lugging gelatin-eyed lumps of half-dead protoplasm out of the mud? Further, the constant rise in the temperature of the water since the Middle Ages makes it rather unsportsmanlike to use the bait at all. If it is mere fish we are after, and not the sport of landing them, it would be much more sensible to use a stick or two of dynamite and be done with the job.

Here is the bait, as displayed hundreds of years ago by the chronicler of chivalry. "War is a joyous thing. You love your comrade so in war. When you see that your quarrel is just, and your fighting blood is roused, tears well up in your eyes. Your heart is filled with a great sweet loyalty and pity on seeing your friend exposing his body so valiantly to carry out the command of our Creator. And then you enlist to go and live or die with him and for love not let him down. From this ensues such a delicious joy, that he who has not tasted it is unfit to say how delectable it is. Do you think a man who does that is afraid of death? By no means. He feels so invigorated, so elated, that he does not know where he is. He is afraid of nothing."

Despite its boy-scoutish ring, this simple declaration of the mediaeval chronicler expresses an undeniable fact.

There may be some confusion among pastors and padres about the purpose of Christ's mission to the barbarians—as noted some way back, but there can be none about the gift of chivalry to mankind: "I came not to send peace, but a sword." How many of those who had the ineffable sweetness of chivalry forced down their throats by their lord or the top sergeant, as the case might be, really relished the experience? Did it taste as sweet coming up as it tasted going down? Many a conscientious objector to forcible feeding has taken four ounces of castor oil daily for weeks rather than savor the sweetness of Christianized murder just once.

On the gentler side, chivalry transformed love. What chivalry made of love is a bottomless cesspool to the diving psychiatrist of today. Common or garden-of-Eden eroticism was not enough for the romantic troubadours of chivalry, and they titillated their ladies' amorosity with all the rarities of a paradisial love that would have made a dying Mohammedan blush like a ripe pomegranate. Nothing was simple, natural, or direct; everything from the first sigh to the last swoon was delicately, curiously abnormal or perverted. By nature more concerned with sex than normal men, the ladies out-troubadoured the troubadours, making their whole lives between the ages of twelve and forty—in one case ninety two—one long, sweet song of unchastity. Their vigor was astonishing.

As these hints are probably sufficient to kindle the flame of research in the bosoms of those not already acquainted with the love-literature of chivalry, we shall only indicate one of the most obscene of all the treasure-chambers of the museum of chivalric love. Here is displayed the complete and perfect instance of poetic justice. The long-departed spirits of the masochistic, sex-starved monks of the dawn

of Christianity returned in flocks to inflame its twilight. All the obscenities of sexual love, as contorted into something singularly unclean by the love-courts of chivalry, are transferred bodily to the mysteries of mediaeval theology. Anyone with the will to do it can make something ecclesiastical out of the Song of Solomon. But it took real ingenuity to clothe the sacred symbols of the Christian religion in the perversions of chivalric love, and those hot-blooded romanticists did a job of it that would have tickled Phryne to delighted laughter.

5. RETREAT FROM STUPIDITY

Mediaevalists sometimes tell us that the quickest way to understand the Middle Ages is to read Dante, especially the *Commedia*. There is no need to recall the story of Dante's practical, thwarted, learned, self-torturing life again; it is readily available in hundreds of places, and is well known in some version or other to all of us.

The mental and psychic ills that ailed the tormented poet, "the voice and spirit of the Middle Ages," are so obvious that they do not seem to have attracted experts in modern abnormal psychology. Dante's whole mind after his conversion (A. D. 1300) at the age of thirty five appears to have been an incurable disease. He was indeed the prophet of his age. All the cruelty, superstition, hatred, corruption, and insane strife of the Middle Ages rushed in one foul torrent through its cloaca maxima, which was Dante's mind, and spewed itself forth in the flood of sadism which is his masterpiece. Until Dante smeared his Purgatory and Hell over the body and soul of humanity, not the craziest self-torturing ascetic had touched more than the fringe of "man's inhumanity to man." Dante's detailed re-creation of the Christian eschatology is the catharsis of

a religion that had gone violently, inhumanly insane. Unfortunately, it was not locked up in the madhouse then and there, but was permitted its unrestrained freedom for another two centuries. Thus it was enabled to nurse the Holy Inquisition.

Erudite theologians and ignorant priests swooped upon the foul feast and bloated themselves with obscene dainties to void over their terrified congregations. Art was pressed into the service of keeping the human mind in subjection by superstitious terror. Masterpieces depicting the wrath of God at the Last Judgment were prominently displayed where the greatest number could study them and be chastened into obedience to the will of the clergy.

These unclean things are still reproduced on the walls of churches, one as recently as 1902 in gaudy mosaic in the chapel of a brand-new American university. Opposite this curious abomination is the reproduction of another old favorite, the handsome portrait of Adam and Eve in the Garden of Eden before the "fall"—when the two innocents discovered the facts of life. The sanguine founder of the chapel confidently expected these artistic relics of mediaeval barbarism to exercise an uplifting influence on the minds of the students. In a way they have. Students of biology glance admiringly at Eve's flowing curves and Adam's athletic frame, and reflect how far science has diverged from myth in the past four centuries. The companion masterpiece is studied by young specialists in abnormal psychology, who have frequently been heard to remark that the great ecclesiastical painters could give Freud a hundred pots of paint and all the brushes he wanted, and beat him with an unsharpened pencil.

All this, however, is in the United States. In holier lands, the old masterpieces still retain their potency, and

more than one child has been dragged screaming from church after an incautious look at the face of Christ, distorted with superhuman hatred, as with one sweeping gesture of repudiation the Son of God consigns the damned to everlasting fire. Marked for life, as Martin Luther was marked, the youngster grows up into a superstitious coward afraid of his own shadow, or of the priest's. Either that, or he transfers the hatred which certain religions have had for common humanity into a contempt for all religions and all their works.

Scholars of course claim that Dante's Hell is allegorical, deeply symbolical, or whatnot—anything, in fact but what the masses of ignorant and superstitious worshippers took it to be and what, in many a Christian country, they still take it to be. The same can be said for the singularly insipid Heaven where Dante's sainted Beatrice at last led him, to have one good look at the face of God. That was all Dante got for his tour through Purgatory and Hell; the damned he interviewed on the way were not vouchsafed this revealing experience. His ideal of love was of course the chivalric, on the cooler side.

Dante felt fully repaid for all his trouble and departed completely satisfied. Beatrice for her part necessarily had no words to express the ineffable bliss of contemplating that same face for twenty four hours a day, day after day, millennium after millennium, for all eternity.

To this very day millions of half-starved and exploited wretches are assured that their eternal reward shall be no less than Beatrice's. Here and there a disappointed voice asks "Is that all?" "Good God!" roars the pastor, "What in the name of Heaven more do you want?" Like Dante's incapacity, the extreme emaciation of the preacher's mind faints at the task of conceiving good. His sterility is that

of his predecessors all through the Middle Ages and after. Their fecundity in imagining evil was something to astound any rational mind unperverted by theology. Those who looked forward to the beatific vision were promised an ecstasy beyond the tongues of angels to describe, because they who promised could think of nothing to say themselves. But at last a faint glimmer of light filtered through the darkness, and it was seen that the gilt on the gingerbread was wearing a little thin in places.

“Lighten our darkness, O Lord,” the perishing had implored for all of thirty generations. Well, if the Lord turned a deaf ear to their plea, at least Nikolas Copernicus listened without being aware of the voice calling him, and Martin Luther astonished himself by answering a prayer he had not heard.

Copernicus (1473-1543) and Luther (1483-1546) between them shattered otherworldiness as the dominating tyranny over human life and led the retreat from stupidity. It seems strange that these two champions of decency against the clergy should have appeared simultaneously in widely separated sectors of the far-flung battle front. There were questioners of mediaeval theological “knowledge” of the physical universe before Copernicus, but they had been effectively ignored, or repressed by the clergy. Nor was Luther the first to challenge the spiritual despotism of the Church. But these two were the leaders whom effective forces were to follow. Luther delivered a frontal assault; Copernicus attacked from the rear. By a superb historical irony neither realized exactly what he was doing to the Church of which he was a devout member. Yet they overthrew the despotism of a thousand years. Luther’s rebellion against ecclesiastical corruption was followed by an outburst of intolerance—among the rebels—as savage as

any of the Middle Ages, but it was of a new kind and more attackable by human beings. There was less superstition in it, although still plenty.

The revolt of Copernicus was to clash with the brutal theological intolerance of Luther's rebellion, and precipitate the war between science and theology that has raged with a fluctuating violence for four centuries. Obscurantists declare that no such conflict ever really took place. There may have been friction between science and religion now and then, they admit, owing to temporary misunderstandings on both sides, but never anything serious. Least of all is there any friction today. A short selection of historical episodes in this asserted and denied warfare will be exhibited in the following chapter. My only purpose in offering these specimens is to present some evidence for the contention that our kind is congenitally incapable of giving even the most promising lifebelt a fair trial.

Before continuing, I must insist that the use of "theology" and "religion" above is not a slip. Apologists accuse historians of the alleged "warfare" between science and its haters of failing to distinguish between "religion" and "theology." The two definitions of religion given in an earlier chapter were intended to provide for this contingency: one man's theology is another man's religion, and vice versa. It is impossible even by the most refined quibbling to separate the two in their application to human affairs.

A son of peasants, Luther was saturated from birth with the superstitions of his class. All the flames of Hell and glooms of Purgatory were his rich inheritance from Dante. Chivalry, too, impressed his boyish mind as the good fathers intended it to be impressed. A church window depicting the vengeful Christ sitting on a gorgeous rainbow with a sharp sword in his right hand, terrified young Luther

half out of his wits. Sacred pictures induced dreams of the Devil which woke him shivering and praying for mercy. To stained glass and paint the world owes no little of its deliverance from the grosser stupidities of superstition.

As a young man, Luther became a great scholar with a keenly disputatious agility in the mediaeval manner. His orthodox devotion to the Church and all its works was a spectacle of saintly piety to please God and ravish the clergy. At one stage of his early career he was in fact hailed as a saint. Not satisfied with the classical macerations practised by the monks, Luther indulged in masochistic ingenuities of his own invention. But so strong was his "conviction of sin," the natural residue of his childhood terrors, that he could not believe himself saved. He resolved a great work to aid the Church in the terrific battle against common sense which it was waging at the moment with every weapon from the vast arsenals of casuistical theology.

The battle of the ages and the Armageddon of the Church was being fought over "indulgences." To comfort sinners and incidentally increase its revenues, the Church had established a sort of central bank of mercy and forgiveness, against which its spendthrift children could draw in this life to lessen their term of torment in the next. Before a cheque against the central bank could be honored, the sinner deposited sufficient of his worldly goods with the Church to cover the cost of collection and safeguard the limited supply of forgiveness from premature exhaustion.

Nice questions of theological law were raised by this ecclesiastical high finance. For example, it was well known that a certain number of human beings were predestined to eternal damnation; the difficulty was to prevent these from having their cheques honored, and others, not pre-

destined, from having theirs bounce back marked "no funds." The amount paid varied according to the gravity of the offense and the ability of the offender to pay. Thus one first-class unprovoked murder, worth a thousand years of purgatory, might cost a baron his castle and half his estate for an "indulgence" reducing his term to half a second. A precisely similar murder would cost the man with only a shirt to his back the shirt—unless he happened to belong to the lower classes, when he would be properly hanged, drawn, and quartered, and would go to Hell anyway for the full term, no matter who got his shirt.

The good monk Luther believed that the whole theory of "indulgences" needed clarification. With a view to putting the matter before scholarly theologians, he wrote out ninety-five "theses" on indulgences and, according to the usual custom in scholastic debates, nailed them to the church door for all his brother monks to see and split hairs over. The historic date was, ironically enough, All Saints' Day, November 1, 1517; the historic place, Wittenburg. To Luther's great surprise, his ninety-five theses were widely discussed, not only by the quibbling clergy, but soon by thousands of the common people, who quite suddenly began to recover something of their common sense for the first time in a thousand years. Before the clergy realized what was happening, the great drift away from their authority was well started. The adherents of the Church realized at last that their lifebelt had let them down.

Today the drift continues, strongly where the spirit of the Middle Ages still broods over the darkened waters, listlessly where enlightenment dawned centuries ago. We may be adrift on a troubled sea without a shore; but whether we are or not, it seems probable that no sensible human being will ever again reach for the lifesaver which let gen-

eration after generation of his forefathers down. And human beings are becoming progressively more sensible every day so far as the long wreck of the Middle Ages is concerned. They have had enough of it.

6. THE BEST THEY COULD DO

Before proceeding on our way along that narrow corridor between the Sixteenth and Seventeenth Centuries where modern science was born, we may pause for a moment and catch what is left of our breaths. The débâcle of the official religion in the Middle Ages suggests several questions, all of them, I believe, improper and therefore unanswerable, that will recur frequently as we continue our inspection.

The first and most important is suggested by this: granting that mediaeval religion "in itself" was a salvation that "might" have made the Middle Ages less dark than they appear to us to have been, we must admit that the religious-minded sector of mankind made but a sorry use of what it was offered. The last is the only point I have tried to make so far. There is no scientific meaning whatever in the Kantian "thing in itself," but for the sake of my point, I am willing to meet half way any who do find meaning in the mystical phrase. Likewise for the mysteries of "might have been." Thus far, then, I am compelled to agree with Grace. Her thesis, I recall, is that our race is stupid beyond all hope of redemption from stupidity, and congenitally bound to make a mess of whatever self-betterment it may attempt. But, touching religion in the Middle Ages, is it fair to judge it in retrospect? This is the question; and because it evaporates in nonsense when analyzed, it will doubtless continue to involve future generations of apologetic historians in arguments as intricate, as interesting, and as void of meaning as those which have charmed the unscientific mind for the past twenty-five hundred years.

To form a just estimate of a given epoch, sentimentalists tell us, we should levitate ourselves into the past, live with the men of the dead epoch, think their thoughts, beget their children, eat their food, die of their diseases, and see with their eyes that have been less than a puff of dust for centuries. The demand is nonsensical. Did you ever listen to an honest witness struggling under oath to describe what he saw with his own eyes only a week before the prosecuting attorney began his cross-examination? Ah, but there are the historical documents, from which a sympathetic mind can reconstruct the dead life of a dead people. Precisely; there are the documents. Who wrote them? And if one witness contradicts another, is only one lying or are both? The long and the short of it is that a dozen romantic "reconstructions" of the past in the supposed atmosphere of the once-living may bear but little resemblance to one another, and yet all be entirely satisfying. Each of the twelve is satisfactory because it is a faithful reflection of the reconstructor's mind, and minds that are not absolutely vacuous are among the most interesting things in life.

There is then the question of fairness. If we look back and observe—from what evidence we agree to accept, temporarily—that certain of our ancestors acted in what to us seems a needlessly stupid manner, should we not offer them our sympathy rather than our laughter? Certainly let us offer them our sympathy. And what good will it do them now? Nor will they be offended by our mirth. For ourselves, it is better to be sparing in our sympathy for those who acted stupidly according to our present standards, however wise their conduct may have seemed to them in their own day. Otherwise, our too-ready sympathy may engender love for the repulsive stupidity we wish to avoid embracing.

Then there is the question of just how stupid our race was in its past misadventures. Did it, in any particular crisis, do the best that could be done under the circumstances? This is the "everlasting If" again in one of its innumerable disguises. But to entertain the abomination for a moment, let us suppose that man has always made the best bet he could with all the odds against him. It does not follow that we should continue to play as our ancestors played. We may begin to suspect by this time that thirteen clubs is an infrequent hand, not likely to be dealt anybody a thousand times running. For our present purpose, this particular question and all its implications are wholly irrelevant. We are trying merely to see whether the great mass of mankind has had the square deal that astute dealers in the past declared it was getting. If we discover that the cards were almost invariably marked with secret signs understood only by the dealers, we may in time develop sense enough to bring our own cards to the table and insist upon dealing them ourselves. But such a discovery is a matter of hope—or dread—and it has no bearing on our attempt to get at the facts.

Was it true in the Middle Ages, for instance, that 999 out of every 1,000 got the best sort of life that was possible in their times? The sympathetic apologist shouts an emphatic "yes!" In that case, the game was straight. And this very straightness of the game was what made it so difficult to suppress. The dealers had everything but numbers on their side, and the numbers (999 out of every 1,000) had everything but brains on theirs. At last, however, as we have seen, one promising cadet, who might have developed into a first-rate dealer had he kept his eyes on his fingers, dropped a card, which was instantly pounced on by the 999. Luther's rebellion against clerical stupidity

was sheer faulty technique and nothing else. Copernicus thought that he too was on the side of the dealers, but played his hand so badly for them that he finally broke the bank—the wrong way.

This is the sort of thing we shall see happening constantly if we care to look. Change, for the great mass of human beings, is a river beyond their control. The men whose work has diverted the river into a new bed, thought—if they considered the matter at all—that they were merely throwing a handful of sand in the water. When at last the new course became visible even to the half-blind, reactionaries tried invariably to dam the channel and force the river back into their own desiccated territory. And as invariably, all the tons of dirt and books dumped into the stream by obstructionists have been washed away with scarcely a ripple.

One handful of sand in particular deflected the river about 350 years ago into a new channel that no one at that time could have foreseen. Even today no scientific mind will forecast what course the river is to follow only a generation hence. All of us are in the stream, and none of us knows where he is going, or whether, when he reaches his destination, he will be washed up a corpse. The one prophecy sanctioned by our past is that we shall all get a thorough wetting, if nothing more serious, before (and if) we again set foot on dry land.

Here we shall leave the Middle Ages to bury their dead, and take our first plunge into the river which Galileo deflected three and a half centuries ago. We shall see the survivors of the great wreck precipitated by Copernicus and Luther floundering through shark-infested waters to a new land, and we shall follow their adventures there. Those who came out alive, in mind as well as in body, were subtly

changed. Their eyes had suffered a strange transformation, and for the first time in history any considerable body of men found themselves capable of seeing nature as it appears to observation, and not as the pure reason of the unscientific-minded had proved that it must be. These men were the first significant corps of modern experimental scientists, the followers of Galileo. To their work can be traced the origin of much that many hold good and about an equal amount that as many more consider bad in our present attempt at civilization. Without modern science, there would be no decent medicine, for example; nor would there be any battleships or bombing planes. But for the advance of science in the past three and a half centuries, we should still be dying of the bubonic plague in our hundreds of thousands every few years, and we should still be forced to do our wholesale butchering of one another with halberds, maces, and meat-axes. Science, and science alone, has abolished all this waste and inefficiency.

Chapter V

THROUGH NATURE TO REVOLUTION

Dare to be a Daniel, dare to stand alone,
Dare to have a purpose true, dare to make it known.—Popular Hymn.

I. SURVIVAL OF THE FITTEST

No sooner did the hardier survivors from the wreck of the Middle Ages realize that they were adrift without a lifebelt, than they struck out boldly for they knew not where. Some were cast up on desert islands, and quickly starved; others were devoured by sharks; but the majority reached dry land safely, only to be clubbed over the head by the officers of the ship that had gone down. The officers had prudently reserved the lifeboats for their own use. This unusual precaution precipitated one of the handsomest rows in all history, the fight between authoritative tradition and young science.

Coming to their senses after their heady welcome wore off, the survivors put up a terrific fight, routed the officers, and settled down to develop the rich natural resources of the land they had unwittingly discovered. They and their successors prospered amazingly, even somewhat alarmingly. Never before in the memory of man had there been a country so rich as this. By the mere turn of a hand they could raise anything from the fertile soil, even the Devil. They waxed enthusiastic—always a danger signal. Almost at the beginning of tangible prosperity one pompous windbag,

an argumentative, sea-lawyer sort of fellow who understood nothing of what was going on but who took all dead knowledge for his province, proposed that the country be christened "New Atlantis." Happily the ribald laughter and coarse jests of the men who were doing the actual work, and not the talking, negatived the proposal.

From that day to this, there has been nothing high-falutin' about the work done by those industrious men in the land their forefathers discovered. It has all been work, work, work, everlasting work. At short notice they can turn out a fully equipped battleship, or a flock of bombers, pocket their profit, and not give a damn about what the purchaser does with the stuff. It is none of their business. They are concerned only with their own affair, which is the efficient running of their country to suit themselves. They will manufacture and sell anything that any fool orders and will pay for.

Finding a ready and highly profitable market for lifebelts, these efficient makers of everything under the sun have recently gone into the business wholesale, and are in process of capturing the world trade. All models are offered at bargain-counter prices, from the strings of fish bladders favored by the ancient Greeks or the azure balloons of the Middle Ages, to the collapsible rubber pants of recent times, which float the wearer with his feet in the air and his head in the water. Like the practical business men they are, these latest competitors for the monopoly in lifebelts believe in letting the customer know his own mind, if he has any, and sell him what he demands. A dictatorship of lifebelt manufacturers, they declare, would be as intolerable as any other. Of course, if the customer has no mind, he cannot make it up and is incapable of ever deciding what he does want. In that case an affiliated corporation, specializing

in the making-up of minds, will supply what is necessary at a nominal cost. The heavy expense of this service is carried on the books as overhead, and is passed on to the consumer. It is never detected in the purchase price, for obvious reasons; so there is no complaint.

All this, however, belongs to the later career of these ingenious men, and we must see first how they got their start. The true history of their rise from nothing at all to world monopoly is a "success story" that makes Henry Ford's look like a chronicle of heartbreak ing failure.

The long struggle men of science had before they could live and work in moderate security from hatred and persecution by their fellow men, is typical of all attempts to lighten human darkness with a little decency. This particular story has been chosen here rather than one of many as discouraging, because it is a necessary curtain-raiser to the revised versions of the same tale familiar to us today. The actors are different, the action is the same. But the story is older, so old in fact that some consider it dead. So we can look back on it and dream ourselves into believing that we should have acted it all out differently. Perhaps we should.

2. A NEW MODEL?

The death of Copernicus, on the very day (1543) the first printed copy of his masterpiece dropped from the press, may be taken as the beginning of it all. With unconscious humor, Copernicus had dedicated his book to the reigning Pope. As the heliocentric theory of the solar system expounded by Copernicus flatly contradicted both the Ptolemaic theory and the Bible, the book gave the Pope much to think about. According to the official astronomy, the Sun and the planets all revolved round the Earth as a centre.

According to Copernicus, the Earth and all the other planets revolved round the Sun as a centre. This blasphemous simplification of astronomy conflicted also with the semi-divine Dante. Incidentally, it knocked the bottom out of more than one bucket of scholastic theology that was said by the clergy to contain the water of life, and it also rendered many sacred vessels of mediaeval philosophy unfit for use.

Even good minds resisted this revolution in all thought, honestly. Francis Bacon (1561-1626) for one never accepted the Copernican theory. Mediocre minds followed the lead of the clergy and condemned the Copernican revolution because it conflicted with the teachings and self-interest of the Church. Champions of the theory could be found in both the clerical and the anti-clerical camps. Later when Luther's religious revolution began to succeed gloriously and villainously, both the Catholic and the Protestant clergy were divided on the Copernican issue. But even the most liberal declared it to be of vital importance to religion, which must be saved at all costs. As a matter of record, many of the Catholic clergy were among the most energetic defenders of the Copernican theory, while about an equal number of prominent Protestant divines led in the persecution of those who dared to believe that Copernicus was right.

At this point some will doubtless recall that the great mathematical astronomer, Henri Poincaré, observed about forty years ago that neither of the two theories of the solar system is more "right" than the other. This of course was a great comfort to obscurantists, coming as it did from a scientist of the first rank. According to Poincaré, it is a matter of mere convenience in description whether we say that the Sun goes round the Earth, or vice-versa. This is a fact and, for our present purpose, trivial. The point of

interest here is not the particular "convenience" considered, but the methodology of considering "conveniences" at all. This methodology is science, which differs from other attempts to understand what the universe means for human beings in two main respects.

First, science undertakes to discover by observation what the facts are. For example, is it a fact, as many believe, that cancer can be averted by prayer and cured by incantations? The first part of this double query is inaccessible to science; it is answerable, if at all, only by an appeal to faith. But the second part could be settled by the statistical study of a large number of cases checked against a "control" group on which no incantations were tried. Abundant data for this strictly scientific enquiry are being accumulated—unconsciously, perhaps—by one of the most influential Christian sects of modern times.

Second, science does not stop with a mere accumulation of facts, as Francis Bacon might have done. It proceeds to codify them and to seek some regularity, some pattern, in all the facts of a particular kind. When such a pattern is discovered, close inspection of it frequently suggests new facts to be sought, and sometimes these are discovered. The new is woven into the old, and the process is repeated till the revised pattern becomes too complicated for use, or contradicts observation, when a fresh start is made.

Nor are the facts toward which science directs its attention selected at random. Experience and chance observation usually suggest some definite question to be asked of nature, including human society. Thus, some tough-minded inquirer in a democratic society might seek to find out whether or not "government of the people, by the people, for the people" is a feasible means of attaining "the greatest good of the greatest number," the declared objective of

democracy. Or again, an impartial fascist might undertake to discover whether the natural devolution of democracy is through slow disintegration into socialism, followed by a more rapid differentiation into communism, with a sudden reversal to fascism or absolute despotism as the final state. A researching communist, on the other hand might take as his guide the working hypothesis that the natural course of communism is through despotism to anarchy, and thence to democracy. An unscientific monarchist, contemplating the researches of his contemporaries, might reach the unalterable conviction that social evolution is cyclic, a sort of jumping from the frying pan into the fire and back again. He would naturally conclude that monarchy, limited or absolute but preferably the latter, was the ideal medicine for society and for himself. And if he were the ousted monarch in person, he would patiently bide his time, motoring, perhaps flying a little, golfing, yachting, and changing mistresses with alternate changes of under-clothes, confident that the restoration could not be long delayed.

All of these men would be using the scientific method in greater or less degree, the monarchist the least. Precisely as professional men of science follow some definite hypothesis in every investigation they undertake, the democrat, the communist, and the fascist would be seeking to verify or disprove some specific guess. The guess would be accepted temporarily as reasonable.

All this is so habitual to those who have ever done it that we may seem to be laboring the obvious. But consider the amount of belief behind so simple an experiment as asking someone what time it is. He looks at his watch and tells you. If you are rushing to catch a plane, a mistake of thirty seconds in the man's watch may cause you to drop

dead of "heart failure" through unnecessary overexertion. You have believed in the man's watch and in his ability to tell the truth—as he sees it, probably inaccurately, and your belief has cost you your life. You have "no time" to get the correct time from central, and if you had you would have to assume that she was not lying. This would be your hypothesis.

Men of science assume that the universe is not one vast lying conspiracy to give misleading answers to civil questions. But before even the simplest question can be put, the inquirer must have some notion of what it is that he wishes to know. His "wish to know" frequently muffles his hearing, and he receives the sort of answer he had been hoping to get. "I told you so!" he exults, and goes on his way rejoicing, sustained by his science in his unscientific wishful thinking.

The "true" man of science, if such a mortal exists, keeps his ears open, questions every word he hears, and endeavors to hear nothing that any other man with good ears could not also hear were he willing to listen. In short he tries his best to be objective. His hopes, his aspirations, his fears must be ruthlessly repressed, and his "will to believe" must be kept in subjection. Then, perhaps, he may get a partial answer to his question. If he is the one lucky man in several hundred million, he may understand what he hears.

Directed experiment to definite ends is the method of science, and the spirit of science is a willingness to abide by the outcome of impartial investigation by the method of science. For good or evil this method has transformed human society out of all recognition in the past three and a half centuries, most rapidly in the past 150 years.

Although Copernicus was not the first to scan the heavens objectively, his work was the herald of the modern epoch

in which we ourselves are living and dying, bringing health and comfort to backward peoples as well as to ourselves, exploiting and slaughtering them, as we exploit and slaughter our own, with a sublime scientific impartiality in the grand process of civilization. This constant doling out of mercy and enlightenment with one hand, and the refinements of barbarism with the other, is itself a fit subject for scientific investigation. Is any "law of nature," any necessary recurrence of the pattern, ascertainable? Religionists and some scientists believe that "progress" is possible, and some even assert that the ratio of "good" to "evil" in the world has shown an ever accelerating increase during the past 350 years. Major disasters, like epidemic wars or outbursts of political or economic intolerance, cause fluctuations in the ratio, but so far have not decreased it in any fifty years below what it was in the immediately preceding fifty. Such is the claim. What, if anything, is the fact? Or is it all a crazy muddle forever beyond the cool precision of scientific thought and accessible only to the gentle lunctionies of mysticism?

One successor of Copernicus in particular is responsible for our asking these questions today. The literary mind is prone to ascribe the beginning of modern science, with its directed experimental method, to Francis Bacon in the Seventeenth Century. Professional men of science, who make their livings at science and who have the technical knowledge necessary for understanding what Galileo (1564-1642) did, know better than to say that Bacon knew anything about science as we know and practise it today. They know also that Galileo is the only man of science up to his time who thoroughly understood the scientific method as we understand it, and who consciously, consistently practised that method.

In this connection it should be remarked that scientists with a curiosity about the evolution of their craft are not so ignorant of the ancient and mediaeval history of science as literary and humanistic historians like to suppose. Extensive research in dead languages and extinct political institutions is not the best possible preparation for a historian of science. Six months in a scientific laboratory is worth more to the future historian of science than six years with the best authors or sixty with the worst humanists. Accordingly, we shall persist in our scientific sin and call Galileo the father of modern science.

From the death of Copernicus to the death of Galileo is just a few months over 99 years. Few, if any, during those years seem to have realized what was happening to the world, and nobody, it is safe to say, foresaw what the new method of science was to mean for civilization, including its possible destruction. The clergy saw that their authority was being challenged, and they accepted the challenge. But they were still dazzled by the splendors of the City of God and did not see where the attack was being aimed. They fought to maintain the blind belief of their followers in the incredible and the impossible. Facts meant nothing against the mythology of Holy Writ. The attack was aimed, not at the myths which most practical men considered of no importance whatever for religion, but at the unbelievable stupidity of the clergy.

With a little more common sense and a great deal less anxiety for their acquired rights and privileges, the clergy would have handed the myths over to the manufacturers of fairy tales, to be revamped into unobjectionable reading for children under ten. Then they could have made their peace with astronomy, instead of refuting telescopes with texts. They might even have captivated their congrega-

tions some three centuries earlier than they did, with popular scientific lectures on the glory of God as revealed to mankind through His servants the astronomers. It was the same with medicine and evolution. It is the same with economics and sociology. Fifty years hence, if there are any listeners whose ears have not been blown into and out of their heads, rapt congregations will probably be listening to the same hymn of praise set to a sillier tune.

As we are considering the revolution started by Copernicus and Galileo, it is naturally the clergy who appear in the rôle of counter-revolutionists. Theirs was the authority challenged; astronomy and physics did not immediately threaten any secular throne. But in following this particular war of innovation against tradition and entrenched authority, we must not let the excitement of some vivid battle obscure the general pattern of all such wars. We today can forget the specific greeds and hatreds which inflamed one side to cruelties beyond the capacity of any untamed beast to imagine, for the roots of those greeds and hatreds are dead and rotten. The persecutors then were fighting for what they considered their inalienable rights. Until the human race dissolves into a mass of listless jelly, or becomes civilized, it seems unlikely that any considerable part of it will not put up a fight for what it considers its inalienable rights. Certainly it is the fact that such fights continue with unabated ferocity.

The pattern of each is identical with that of the clerical war against the new method of science and those who practised it. Mere differences in the colors or technical refinements of the weave should not mislead us; the pattern remains the same. So in dwelling upon the part played by the clergy in the fight against science, we do not mean to exhibit those excellent men as monsters of selfish depravity

in comparison with our irreproachable selves. Except for the difference of a century or two in time there seems to be but little to distinguish the persecutors of their age from those of our own. They have the doubtful honor of being the prize laboratory specimen of human stupidity when faced with inevitable change, simply because their epoch preceded our own by so considerable an interval that they are now all dead and admirably preserved for detached study. No doubt we too shall be pickled and bottled in museums for the reverent awe of future generations.

The essence of the scientific method rather than any of its tangible fruits inspired the fiercer hatreds and the more sadistic persecutions. Those in authority sensed that an objective approach to any question must sooner or later elicit an answer which even the stupidest must accept. Here was something new in human experience, an attempt to get at the verifiable fact without regard to human desires or human prejudices. I do not forget a few of the ancient Greeks; but the Greeks were all dead and their first halting steps toward the scientific method long since obliterated. Similarly for other solitary walkers long forgotten. Frequently the scientifically ascertained fact traversed all pre-conceptions of what self-interest declared the scheme of nature must be, arousing uncontrollable anger against those who had discovered the fact. Being unable to suppress the fact, which somehow had a phoenix-like trick of rising from ecclesiastical bonfires kindled to destroy it, those who loved God but feared facts suppressed the discoverer or sublimated him at the stake.

Denial of incontrovertible facts that can be ascertained by experiments and verified at will by others performing the same experiments, is the first principle of persecution; unappeasable hatred of experiment and of all who practise

or advocate it, is the second. Putting these two principles into vigorous action is the third and last principle. All three beget a reliance in the revelations vouchsafed to great men who have been dead for at least a century.

The belief in experiment as a promising lifebelt for humanity is quite recent, so far as I can find out. I can discover no explicit statement of it in the writings of any professional scientist earlier than 1900. Since then, it has appeared frequently in semi-popular scientific writings by eminent men of science, whose enthusiasm for "the objective approach" to economic and social matters sounds slightly unscientific. Not enough has been done in that direction to enable any man with a grain of caution in his constitution to say whether the objective approach to human affairs is less likely to fail than an approach on purely sentimental and emotional lines. The "scientific" thing to do would be to find out first what the facts are, by observations and controlled experiment. No such experiment has been proposed, much less undertaken. Men of science are apt to assume that their unscientific companions in zealous distress are as rational as they themselves are, or as a happy family of hopelessly logical maniacs are. One thing, however, about all this does seem to be a fact: the objective approach has not been given a fair trial, even in some departments of science; for example, sociology. Possibly the scientific method in human affairs may turn out to be more than the mere lifebelt our agonized race keeps clutching at and never grasping; it may be the streamlined Twentieth Century model of Noah's Ark. In that case we shall all be saved and walk once more on dry land. In the meantime we may return to our goats, and see what happened to these unhappy creatures who suffered for the transgressions of their persecutors.

3. VICTORIOUS TRADITION

Tons of books and documents record the persecution which science suffered before it grew independent enough to be reckoned with as a major social force. At one time even those least offensive of men, the mathematicians, were vigorously chastised for presuming to use what brains they had. The persecutors of Galileo thundered that geometry is an invention of the Devil and that mathematicians should be banished as the authors of all heresies. What an unmerited honor!

We cannot go into detail on any of the innumerable battles between authority and impartial investigation; so we shall glance at the broader outlines of only three. In doing so it will be well to remember that mere persecution does not necessarily endow a man with all the virtues, any more than dispossession and exploitation endow the proletariat with all the social intelligence which the rest of society lacks. Remove the persecution, and you are as likely as not to be shocked by a man as human as yourself, with all the disagreeable qualities you do your best to conceal from yourself and your neighbors. Further, it is lamentably true that people who are always in hot water frequently deserve to be boiled in oil. Even the most tolerant among us might well hesitate before inviting a martyr on a three weeks' camping trip in the desert. However, practically all of the scientific men mentioned here were the sort you would gladly be shipwrecked with if you had to be shipwrecked with anybody. You would at least stand a fifty-fifty chance of getting to land.

In Protestant countries it is customary to minimize the stupidity and cruelty of the Protestant leaders in the war against young science, and to maximize the errors of the Catholics. As a matter of fact there was little to choose

between the two. The Catholics were naturally more numerous; that was all. But what the Protestants lacked in volume they made up in the concentration of their venom.

Luther (1483-1546) and Calvin (1509-1564), the morning stars of dawning Protestantism, distinguished themselves by calling Copernicus a fool. Their quarrel with the Copernican picture of the solar system was identical with that of the Catholic clergy: man, the last and noblest work of God, was displaced from the centre of the universe where it had pleased his creator to place him. Deny that the Earth is the centre of the visible universe, and you deny that man is the central concern of the creator of the universe. At least it seemed so to the theologians of all colors.

They appealed to reason. In passing, I recall that some years ago (possibly also today) the anarchists published a journal called "The Appeal to Reason." If the anarchists knew a little more than they appear to know about the history of reason, they would stop appealing to it. Of all the beautiful prostitutes that have ever led willing men astray, so-called "pure reason" is the most enticingly beautiful and the most dangerously diseased. And of all the great logicians who have perfected the seductions of pure reason, Saint Thomas Aquinas (1226-1274), "the seraphic doctor," is one of the very greatest. By pure reason he established the dogmas of the Church, including the incomprehensible mystery of transubstantiation, on so firm a foundation that they remain unshaken—by pure reason—to this day.

Aquinas believed that the unaided brain cells of human beings can discover the "necessary" constitution of the universe and the "laws of nature" governing all natural phenomena, from the solidification of a boiled egg to the motion of the planets. Observation, finding out how things register on our senses, was taboo in the seraphic logician's

methodology. If common experience indicated that fire is hot and ice is cold, this was an infernal delusion if pure reason, proceeding from the assumed absolute truth of every statement in Holy Writ, deduced the opposite. Less sacred only than the inspired scriptures were the writings of Aristotle. Wedded to the primitive mythology of early Christianity, the Aristotelian system brought forth scholastic theology, metaphysics, and philosophy, the holy trinity of anti-scientific "reason."

Lest anyone imagine that the pure mediaeval reason is dead, I note that in the late spring of 1937 a spirited debate began between some of the leading British mathematical physicists and astronomers, and their opponents who still believe that observation is necessary in order to find out how the universe of science works. Some of the foremost of the mathematical astronomers believe with Aquinas that paper, pencil, and words are all that is necessary in order to explore the depths of astronomical space. They may be right; but if they are, they are less modern in their scorn of telescopes than they think they are. As I write this, the debate is still roaring full blast after two months of heated argument. Bystanders are being badly singed, as usual.

All through the war on the scientific method the chief weapon has been the appeal to reason. In particular, this is disastrously true in economics. In the earlier stages the appeal was directly to Aquinas, ultimately the same thing. Even today, when the battlefield has shifted from the physical sciences, astronomy, and biology to sociology and economics, you can hear eloquent appeals to Aquinas any Sunday you care to tune in on your radio to the proper great headquarters of propaganda for the status quo. Communists and revolutionists in general are said to be holding their breaths for a refutation of the seraphic doctors as

spectacular as the moons of Jupiter. It was these amusing little satellites that enraged the champions of pure reason to their cruelest attack.

Galileo (1564-1642) was born in the year of Calvin's death. Calvin had codified—or petrified—the Protestant creed into the essential dogmas we now enjoy. Galileo and Isaac Newton, born the year of Galileo's death, were to codify the laws of motion of material bodies, so that physicists and engineers could apply them to the regulation of nature for scientific and industrial purposes.

Galileo is rated as one of the martyrs of science. As a martyr, he is a very unusual specimen. Anything but meek and long-suffering, he had an ironic wit and a sarcastic tongue—on occasion—that infuriated the good but somewhat stupid men who sought to silence him by pure reason. His courage was invincible, and it was not the courage of ignorance. An Italian and a scholar, Galileo wrote some of his scientific works in Latin, others in Italian. Consequently the unscholarly, who knew no Latin, got an inkling of the dispute between logic and observation, and developed a keen appreciation of the dialectical skill of Galileo. The learned doctors of theology and Aristotelian logic might have suffered in silence in the Latin tongue; but to be shown up for the incredible dolts they were in the language of the common people was just a little too much. For long they were as patient as good Christians and irreproachable logicians should be under the stings of unanswerable facts, but finally they rebelled. Galileo seems to have gone out of his way to enrage his opponents; certainly he succeeded beyond his wildest ambition.

The pure reasoners started their major offensive in 1610 when Galileo announced his discovery of the satellites of Jupiter. According to pure reason, the many sacred sevens

of Holy Writ made the existence of more than seven planets impossible. But moons are planets of a sort. Here was Galileo's telescope defying the Seven Churches of Asia, the seven-branched candlestick of the holy tabernacle, the seven golden candlesticks of the Revelation of St. John the Divine, the seven-league boots of folklore, and several septets of devils and angels duly recorded in the memoirs of the Fathers. Equally reprehensibly, Galileo was claiming to have revealed celestial bodies of which Aristotle knew nothing and said nothing. All tradition and authority were being flouted shamelessly. There were spots on the Sun, too, and the Sun rotated on an axis. This again contradicted Aristotle, who had declared the Sun to be an immovably fixed spotless perfection.

"Take a look through this little 'optic tube' of mine," Galileo invited. But they declined, and reasoned the spots off the Sun and Jupiter's moons out of the sky. Later, a few intrepid scholars took their souls in their hands and did look through the telescope. Their feats of reasoning surpassed even those of their predecessors; they proved that the satellites and the spots were caused by some sort of periodic defect, due to the Devil, in the glass of Galileo's lenses. This striking demonstration probably records the high-water mark of pure reason for all time. Since this mark was reached, the soaring mind of man has been held down occasionally by his unsympathetic senses. When it is not so held down, the roof of a lunatic asylum does what is necessary.

So far, all had been largely verbal debate. Galileo politely called his opponents fools; they did not know what to call him. Now the embattled clergy whipped up the congregations of the faithful to demand the immediate trial of the heretic Galileo at the hands of the Holy Inquisition.

This supreme court of ecclesiastical justice had been trying heretics—by definition all who were suspected of unbelief in the official religion—for a full four centuries when Galileo came to trial. All the experience of four hundred years in forcing “confessions” from reluctant heretics was therefore at the ready disposal of Galileo’s examiners.

There is no need to recall the technique of the Inquisition. Anyone who wishes to refresh his memory can easily do so; and in keeping with my policy of not exhibiting anything that might disgust the sensitive, I shall not repeat any of the familiar epic of sincere sadism which is the history of ecclesiastical justice during the supremacy of the Holy Inquisition. Most of us have had enough of it, although the “white” army in Spain marched at one time in 1936 behind banners demanding a return of the Inquisition. Today we are happily rid of the terrible nightmare—unless, of course, we are so foolhardy as to disagree with the police of Russia, Germany, Italy, or the United States, when we get our just deserts.

The war against Galileo lasted a third of a century, with the Church at last victorious. A protracted cat-and-mouse game with the Inquisition finally wore Galileo down, and in his seventieth year, broken and ailing, he knelt before his sanctified judges and recanted:

“I, Galileo, being in my seventieth year, being a prisoner on my knees, and before your Eminences, having before my eyes the Holy Gospel, which I touch with my hands, abjure, curse, and detest the error and heresy of the movement of the Earth.” (Greatly abridged.)

Galileo had offered religion the lifebelt it needed to keep it afloat and it had preferred a millstone to hang about its neck. Since the thing which Galileo fought rejected his offer of sanity, it has suffered a recurrent illness that will not let it die in peace. It seems to be immortal.

After the death of Galileo (1642), leadership in astronomy and the physical sciences passed to England and France. Newton in particular carried on in the spirit of Galileo, and in his epoch-making work on the composition of white light, gave one of the most brilliant demonstrations in all scientific history of the efficacy of the objective experimental method in competent hands. This work was done in the last third of the Seventeenth Century. Newton was honored for his science, or at least not hampered and persecuted. Although religious persecution was common enough in England, there was no Inquisition, and men of science were left in peace to work out their own damnation.

The two-hundredth anniversary of Newton's death was fittingly commemorated in 1927 by gatherings of scientific men from all over the civilized world. In the two centuries that have elapsed since Newton died, physical science has wrought a profounder revolution in human life than any prophet of Newton's day would have dreamed possible. Like nearly all men of science down to the very recent past, Newton abstained from prophecy about science, or anything else except predictable recurrences of natural phenomena in accordance with scientifically ascertained "laws" of nature. He seems to have been satisfied to do scientific work for its own interest. Attempts by Marxian historians to put an economic drive behind Newton's discoveries are futile in face of the undisputed facts of Newton's life. They can claim, of course, that Newton was inspired by "the spirit of his times," and nobody who understands the meaning of scientific evidence will bother to contradict them: the spirit of Newton's times, or of any other times, is a theological or metaphysical abstraction devoid of ascertainable meaning.

There is, however, one great spirit to whom Newton, and through him, science, owes an undischargeable debt, namely

Henry the Eighth of England. Without the uncompromising warfare which this hearty syphilitic waged to a victorious conclusion against the Church, in order to enable him to get on with his polygamy, the England of Queen Elizabeth and her immediate successors would probably have tolerated the stupid repressions that broke Galileo. What would Newton have said to the inquisitors? "Bluff King Hal" died in 1547, just about a century before the birth of Newton. Here is a magnificent opportunity for men of science to hold a gorgeous four-hundredth anniversary celebration in the not very distant future. A life-size statue of Henry VIII as the unintentional patron saint of physical science might be dedicated in Westminster Abbey on the closing day of the ceremonies. The Archbishop of Canterbury, as head of the Church of England, would of course be asked to unveil the statue, as it is largely to Henry's matrimonial versatility that the Church of England owes its establishment and its present highly commendable nervousness about divorce.

4. FURTHER VICTORIES

Having won its battle against objective experiment as represented in the person of Galileo, the victorious Church passed on to greater conquests. After all, the defeat of Galileo was rather a cheap success, not worth a tenth of its face-value. The quiet way in which workers in astronomy and the physical sciences kept at their task of convincing all but the clergy and hopeless imbeciles that science, not theology, is the key to things as they are, caused the conservatives some uneasiness, but nothing repressive could be done about it. They began to realize that not all of the people can be fooled all of the time, and directed their attention to easier obscurations.

The second of the three great battles we shall briefly glance at is that of scientific medicine against superstitious authority. This again illustrates our human propensity to thrust from us a fairly promising lifesaver in favor of any quackery with an attractive or familiar label. Objective fact regarding the human body was assailed even more viciously than the same for the celestial bodies of astronomy. For, according to the Scriptures, your body is the temple of the Holy Ghost, and as such is not to be desecrated by scalpels seeking to uncover the mysteries of your heart, lungs, liver, kidneys, and less mentionable organs. Exploration of these or similar arcana was strictly forbidden under penalty of death, and the early researches of Christian times in human anatomy were done in secret.

Here again the conflict between science and authority arose from the initial stupidity of the religious-minded having put all their eggs with Saint Augustine's in the bottomless basket of Thomas Aquinas. They were bound to defend the sacred basket, although there was nothing in it. And defend it they did, with logic, reason, and frequent appeals to the Supreme Court of Holy Writ. During this protracted litigation, the appellant—the European branch of homo sap—was all but silenced by plague and less eloquent debaters against scholastic theology. The good doctors themselves were often seized in mid-syllogism by violent cramps in the belly, and were unable to continue this side of eternity. Still they could learn nothing. Education had so miscreated them in its own image that they were one hundred per cent impervious to facts.

In conformity with the doctrine of rewards for subservience to the official creed and dire penalties for the use of the senses, disease was a visitation of divine wrath. Certain historical cases reported in the New Testament,

for example the episode of the Gadarene swine, made it mandatory to ascribe sickness in general to the presence of devils in the human body. Amply substantiated by Holy Writ, demonology became the official dogma concerning disease. Instead of using gimlets, the learned doctors sought to pray or curse the resident demons out of their cavities, often with astonishing results. No less than thirty seven batlike creatures were induced to vacate the body of a blasphemous diabetic who persisted in sleeping on his back with his mouth open. The eloquent doctors saw them go and counted them as they took wing to Hell. As the three attendant physicians agreed on the count, there probably was no mistake. This was the sort of inspired medicine which science had to overthrow before it could cast humanity a lifeline and drag its suffering body out of unnecessary pain and remediable disease.

Not all of this battle was fought in the Middle Ages, or even in the Renaissance. Although it hardly belongs to medicine, witchcraft is of the same sinister stripe as demonology. Our own New England Saint, the Reverend Cotton Mather, acquitted himself like a hero of the Inquisition—although he was a rabid anti-papist—in the prosecution of men, women, and children accused of harboring demons or trafficking with the Devil. According to my policy of omitting all account of physical horrors, I cannot state here the excesses to which this sadistic American saint was driven by his compelling faith. Those interested can easily find what they want. More significant, perhaps, for the course of the general conflict between science and stupidity was the defiant ultimatum of John Wesley, the founder of Methodism: "The giving up of Witchcraft is in effect the giving up of the Bible." Very well, so be it: witchcraft has been given up.

Coming to more recent exhibitions of the same sort of reactionary stupidity in the face of inevitable advances in medical practice, we note three striking instances. All relate to that forbidden garden which lately, as so often in the past, has caused such acute embarrassment to the English clergy. The reader will doubtless have guessed by this time to what I refer; but to avoid a false charge of prudishness I shall be explicit: I refer to the genito-urinary tract.

In the late Sixteenth Century a woman was burned alive in Scotland for seeking relief from pain in childbirth. But that was over three hundred years ago, when people really believed in the curse laid on Eve for her disobedience. Eve's sin was not forgotten by the clergy till the middle of the Nineteenth Century, when Scotland partly redeemed herself through one of her sons, James Simpson, a doctor with a thoroughly Scottish sense of humor. When Simpson was attacked by the clergy for administering chloroform to women in childbirth, he did not call his opponents bigoted blockheads, but replied in kind. "My opponents forget," he wrote, "the twenty first verse of the second chapter of Genesis; it is the record of the first surgical operation ever performed, and that text proves that the Maker of the universe, before he took the rib from Adam's side for the creation of Eve, caused a deep sleep to fall upon Adam."

Not until it was too late did the clergy notice the obvious application of Simpson's curious confusion of the rôles of the sexes—a strange mistake for a doctor to make—in the drama of parturition. They missed their opportunity to insist that it was the male parent, not the female, who should get the chloroform. Can Simpson's logic be the origin of the current American slang, "ribber"? Anyhow, his rare jest is one of the earliest authentic instances of a collective ribbing.

The second flower from the forbidden garden was culled only yesterday. Since "the wages of sin is death," it is only right that sinners who contract venereal diseases should suffer in obscurity for their sins and die disgracefully. Syphilis, which is a very meaningful word to at least ten per cent of the adult population of the United States, was rigidly banned in polite speech, print, or over the radio, till the doctors of the country organized a campaign of publicity to bring the "red plague" out where it can be seen, advertised, and eradicated. Today the activities of societies for the prevention and cure of the disease are freely reported along with the rest of the daily news in all newspapers, except those of the erudite sect which believes sin and disease to be mere errors of the human understanding. It is reported that women's clubs all over the country discuss the subject with animation. Likewise for the other disease until recently taboo in polite society, although a large fraction of polite society had contracted the disease, usually before marriage, but not always. If certain deservedly popular women's clubs had taken a little interest in a similar discussion a century or two ago, there would be less necessity for all the talking by the women now. But the wages of sin had to be paid.

Before flitting from this particular flower to its comely sister, I should like to mention a democratic project I have had in mind for many years. Unfortunately, I do not see how it can be executed. "There ought to be a law," but there is not, and I can imagine no way of enforcing my dream-law even if it were enacted. I should like to compel every man or woman who holds public office, or who is a candidate for such office, to submit to a Wassermann test and publish the result where every voter would be certain to see it, namely, on the ballot. Then perhaps we should

be quit of half-crazy weeping or shouting statesmen and dictators for a spell, and we should not have to wait for the post-mortem to learn that some megalomaniac "empire-builder," who had dropped dead of "heart failure," had really died of a characteristic aneurysm. Publication of the test, repeated at yearly intervals if necessary, would cut short more than one lunatic career before it got well started in a sane society.

The third and last flower of the forbidden garden also blossomed only a day or two ago. Some may remember how our beloved Roosevelt the First ("Teddy") went roaring through the land a generation ago, summoning all good males and better females to combat "race-suicide." Some may even recall the slogan chanted by irreverent schoolboys behind Teddy's back: "Get the habit, like the rabbit; multiply!" We alluded to dictators a moment ago. Signor Mussolini has declared that the only way Italy can secure the place in the Sun commensurate with her recognized abilities as a spreader of civilization, is for the Italian women to breed so fast that the accumulated pressure of half a dozen normal generations in one will blow the lid off. The Japanese women also are urged to cut out the muffler and roar down the home stretch to the inevitable explosion in this race of races. Nor are the Indians lagging. Every ten years the population of India increases by thirty millions —a profit due directly to preventive medicine and scientific engineering. Germany also is competing. Both Japan and Germany, it will be recalled, are governed by military dictatorships. Until quite recently, human mating in the United States proceeded with the same blissful disregard of consequences that made the Garden of Eden such a delightful summer resort.

The same opposition that has always opposed every appli

cation of science to human affairs successfully opposed the dissemination of knowledge concerning contraception until, as usual, the opposition was thrust aside by stronger forces. Now the opposition, quibbling to the last dirty ditch, proposes a "natural"—and ineffective—substitute for the millions of its faithful. Defeat after defeat in the past four centuries has taught the obstructionists nothing. We can only admire their courage.

It must be added, however, that not all of those entitled to a scientific opinion are agreed on the merits of the remedies now no longer illegal, as they were till yesterday because of their "obscenity." Some foresee a lingering suicide of the race. If they are right, "birth control" may be the lifesaver we have sought in vain all these weary years. Extinction may be the one betterment that will do us and the rest of the animal kingdom any lasting good.

From the examples just given, it is evident that medicine has had a longer battle against human stupidity than any of the physical sciences. It is still fighting, and the power behind the enemy is the same. Whoever optimistically believes that demonology is dead today in western civilization, may be recommended to explore the teachings of the cults all about him. He need not visit some filthy shrine or foul though sacred river to observe the spread of contagion among the faithful. Nor need he be crestfallen in his unbelief when he sees some hysterical woman brought to her senses of a Sunday, and shocked out of her psychological paralysis by fervent exhortation and sudden immersion in cold water. A hearty smack on the right spot with the palm of the open hand will accomplish the same miracle any day of the week. The absent treatment by prayer of a helpless child in the clutch of tetanus may make the observer wish to commit murder; but he must restrain himself,

for the law protects the ignorant in their torture of the defenseless. Still, for all these retrogressions to the Middle Ages, the picture has its brighter side. The wilful and malicious ignorance of the faithful is their certain extinction within a few generations. Then the survivors—if there are any—may have a fair chance to test the lifeline which science is trying to throw them.

The last of the three great battles we shall recall is that of evolution, and we can be brief. To the Victorian conservatives, as to the late William Jennings Bryan and the good citizens of Tennessee, Charles Darwin was an incarnation of the Devil. Once more authority, relying on the ancient myths, deliberately closed its eyes to the evidence of its human senses, and refused to see any sequence in the long rows of fossil remains arranged according to almost continuous variations of structure from a “lowest” type to a “highest.” Comparative anatomy alone added thousands of inexplicable “coincidences” for the blind to see and explain away, while geology could be read almost as an open book. Man himself fitted into the scheme. So did the anthropoid apes. Their family branch and man’s insignificant twig were seen to stem from the same grand limb of the tree of life. If you cared to climb down a little farther, you soon found yourself among the reptiles. A long slide down the trunk finally landed you in the primaeval mud whence, according to evolutionists, we all emerged. There was not much objection to the last; mud is only dust with a little added water.

It was the earlier stages of the descent of man to which the vilifiers of Darwin objected. If you assume that men are the children of God, or at least have divine sparks in them, and if you assume that men are cousins to the apes, what follows? But every good Christian who has ever

visited a zoo knows that the apes are dirty beasts without a spark of divinity anywhere in them. Hence one of our two assumptions must be inadmissible, and as it cannot be the first, it must be the second, since one and one make two. From this it follows immediately that evolution is absurd.

Remembering nothing of their previous routs, especially in the matter of witchcraft, the unteachable stripped to their underclothes and whooped pell-mell to the assault. They got what might have been predicted. It is no more than simple charity to say that they almost disproved the Darwinian theory of the descent of man by making complete asses of themselves, a Darwinian impossibility.

Did defeat for about the five-hundredth time at last teach them anything? No. Today the same forces are itchingly preparing for an assault on modern, post-Darwinian biology, because newer developments hint at the possibility of breeding superstition out of our race and common decency into it. Should this ever be seriously attempted, we who have witnessed so many lifebelts blow up or sink to the bottom of the sea at the critical moment, will lean back on our golden chairs and view the experiment with interest.

Looking back over the record so far, we may sum it up in a few short propositions. Belief in things that cannot be put to objective tests here and now has let the race down. Such belief has without question brought comfort of some sort to millions of believers, and no humane man would seek to deprive anyone of a belief that makes life more endurable, even if he knows that belief to be founded in fable and maintained by fraud. On the debit side, belief in the unverifiable has made life wretched, through the action of believers or through fear and superstition generated by the belief itself, for many more millions. Whole classes of men

have been enslaved to wretchedness the greater part of their lives as the direct or indirect result of supernaturalism and its apparently unavoidable superstitions. The scales seem to tip toward the side of disadvantage for the race as a whole.

5. ISSAC NEWTON AND BENJAMIN FRANKLIN

Turning from this particular sector of the war between the scientific habit of mind and its haters, we shall follow the course of several major battles in which no decision has yet been reached. These are doubtless of greater personal interest to the majority of people today than are the historic fights we have just witnessed.

But lest anyone imagine that science, *as science*, has nothing further to fear from the reactionary stupidity of the narrowly religious-minded, I assure him that he is grievously mistaken. A handful of evidence backing this assertion will be found in the concluding chapter, and anyone interested can easily find all he wants. In those blest lands where the religious-minded have recovered their grip on everything from the banks to pure mathematics, science is being regimented like everything else. In Germany, for instance, the official religion counts Einstein's theory of relativity a blasphemous heresy. This is logical enough: the official religion is based on a theory of absolute values, just as the official religion that persecuted Galileo was based on a system—now happily and ignominiously upset—of absolute values. As a student of mathematics, I regret to report that in this scientific return to the Middle Ages, some of the leading mathematicians of Germany have joined their religious-minded colleagues in the physical and biological sciences in making mountebanks of themselves.

The battles still in progress which we shall view from a

safe distance are concerned, broadly, with social disputes. All fights between the scientific habit of mind and its enemies are of course social, but those to come are more obviously so, especially where the dispute is over problems of economics. In social rows the narrowly-religious mind betrays itself in its uncritical reverence for tradition, its fierce—and often brutal—loyalty to absolutes and abstractions, like Right or the State, and its cold, malicious hatred of all those who seek to put traditions, absolutes, and abstractions to the impartial test of objective verification.

As has already been emphasized, the pattern of all wars against the scientific habit of mind and those who have it is the same. The veneer of smooth mysticism in which the weapons of the faithful are frequently camouflaged does not conceal their inhumanity. Thus, when we hear the words of Christ being quoted—as we shall—in extenuation of the grosser barbarities of the Industrial Revolution, we must be very deaf indeed if we fail to hear also the comments of the starved or the slaughtered.

In the battles to be reviewed, the legal type of mind was never very far behind the front-line trenches. From the very nature of their profession, lawyers must give strict obedience to tradition and precedent. In this necessity they are closer to theologians than to scientists. There are said to have been exceptions to this rule, but they were neither numerous nor impressive. If it is true, as many believe, that our present civilization is essentially scientific and technological, it may also be true that a purely legalistic regulation of our human affairs is slightly out of date. Some would even go farther, and assert that it was already outmoded when our Founding Fathers composed the Constitution of the United States. I would not report so daring a heresy did it not have the backing of a great American patriot and profound student of constitutional history, the

late President Woodrow Wilson. As this brings out admirably a cardinal distinction between the scientific temperament and the unscientific, I shall summarize here the bare facts—following Wilson.

According to Wilson, the framers of the Constitution were influenced, possibly in spite of themselves, by their reverence for what in their day was the absolute, eternal truth. The Newtonian scheme of the physical universe was the last word in knowledge when the Constitution was being framed. Not only in England and France, but in America also, the Newtonian philosophy had already attained the sanctified status of a hallowed tradition. Whoever was not struck dumb with admiration and reverence for this revelation of divine wisdom to groping mankind was simply stupid. Now, Newtonian mechanics is a beautiful abstraction of "forces" in equilibrium, or tending to equilibrium. Hence the delicate system of "checks and balances" in our Constitution. I repeat that this wild heresy is not mine but Woodrow Wilson's.

Still more heretical is the "explanation" of Benjamin Franklin's historic reluctance to endorse the Constitution framed by his legal co-signers. Franklin finally affixed his signature to the Constitution because he could not argue his legal colleagues into accepting his conception of something more scientific. For Franklin had a thoroughly scientific mind, and was in fact a great experimental scientist. He could not believe that Newtonian mechanics was the ultimate revelation of divine wisdom to obtuse mankind, and he reserved his reverence for what can be tested and checked against observable facts.

Franklin's epoch-making researches in electricity were responsible for his bias, and it is interesting to note that electrical technology has played a very considerable part in making the famous "horse and buggy" museum pieces

rather than the convenient means for getting somewhere that they once were.

With a glance ahead we shall proceed in a moment to our next inspection. As someone has remarked, a Roman of Julius Caesar's time would have been able to find his way about Europe with ease in the early Eighteenth Century. Nothing essentially new in kind would have puzzled him. The civilization about him was in the same tempo and not radically different from his own. But should he have delayed his return to the glimpses of the Moon till the Nineteenth Century, he might well have imagined himself a raving lunatic. The whole material texture of civilization had been transformed in a few decades out of all recognition. The transformation was due mainly to that modern science which unteachable reactionaries, fighting for their vested rights and privileges, had done everything in their power to thwart and destroy.

Looking back today on the Industrial Revolution, we might delude ourselves into believing that we should have grasped the lifebelt which science offered the world in the late Eighteenth and early Nineteenth Centuries. Had our great-grandfathers seized their opportunity, we might all now be sunning ourselves on dry land. But candor compels us to admit that this retrospective foresight is but another instance of the everlasting "if." Like incorruptible inspectors we must reject all bribing "ifs" and examine the inside of the lifebelt as well as its nicely painted skin. The inside has been called by various trade names; that most popular toward the end of the Eighteenth Century was "the social contract." We shall look at this curious stuff next. Some say it is made of cotton, others of air, and yet others declare it is nothing but three broken bricks and a few handfuls of dirt.

Chapter VI

THE ROMANTIC MODEL

Man is born free, and everywhere he is in chains.—JEAN JACQUES ROUSSEAU.

Logic is like the sword—those who appeal to it shall perish by it.—SAMUEL BUTLER.

I. PROPHET OF DEMOCRACY

AMONG the major prophets of democracy, Jean Jacques Rousseau (1712-1778) towers up as one of the most romantic. His conquests of stupid servant girls and other impressionable females are not his claim to the high title of romanticist; the extraordinary muddlement of his mind is. His imaginative writings were much admired by the French Revolutionists, and still are by others. The most remarkable thing about them is their uncanny resemblance to the somewhat drier works of Euclid.

I am not going to spring any technical mathematics on the unwary; but I must remark that without a glimpse of the essentially mathematical character of Jean Jacques' mind, it is impossible to appreciate his supremacy as a manufacturer of lifebelts for a perishing humanity. With a better formal education than he got, Rousseau might have become a memorable mathematician; but no amount of education of any sort would ever have given him the least inkling of the scientific habit of thought. Rousseau's mental processes were as mediaeval as those of Thomas Aquinas or Friedrich Hegel.

An Eighteenth Century mathematician might not have hailed Rousseau as a fellow-craftsman; almost any mathematician today would recognize him at once as a member of the guild and a particularly exasperating one at that. Rousseau's head was sound enough, but his heart was all a-flutter like a palpitating schoolgirl's. Some mischance of birth caused an inextricable confusion between his heart and his head; and all his life he throbbed sweetness and light, with frequent emissions of bile, in perfectly synchronized mathematical rhythm. Not once did he suspect that his rigidly logical deductions from his hypotheses had no possible connection with facts. It was inevitable that he should be acclaimed as a savior of humanity by emotionalists in search of a savior. He had all the necessary qualifications.

To justify the foregoing remarks, I must repeat part of a story, now old to many, which may be new to some, especially to those whose interests are mainly literary, social, economic, or humanistic—anything in fact but scientific. It concerns the radical distinction between mathematics and science. For “mathematics” those who like may put “logic.” We have already seen the point in connection with the Christian Fathers and their science-hating sons; but an explicit statement will throw a clearer light on the bricks in Rousseau's lifebelt.

A mathematician makes assumptions at will, and from those assumptions deduces propositions. If he encounters no contradictions, his propositions are true, by definition. For example, he might take as one assumption, “all men are born free,” as Rousseau in effect did, when he could proceed as follows. “Uncle Tom (Little Eva's colored friend) is a man; therefore Uncle Tom was born free.” But as a matter of fact Uncle Tom was born a slave on his

master's estate. "Ah," Rousseau objects, "but that is not what I meant. I meant that all men *should* be born free." As you do not care to quibble, you ask him why the Devil he did not say what he meant in the first place.

Rousseau's only answer is a bilious silence. To smooth his ruffled liver you congratulate him on being a born mathematician. For mathematics is concerned only with the consistency of its deductions and not at all with the "truth" of its hypotheses. The above example proceeds from an assumption which is palpably false in fact, and exhibits a proposition, deduced from the factually untrue hypothesis, which is true in the mathematical sense, although, as even Rousseau was forced to admit, it is factually false. This may sound like splitting hairs; but if it is, then Rousseau achieved the unusual feat of hanging a large portion of the human race on a single hair split three ways at once.

As a matter of fact, it is not splitting hairs. It is an illustration of that meaning of mathematics which most professional mathematicians accept. The only reputable mathematician who to my knowledge rejects this meaning is the American whom his confreres call the Heidelberg Man. As Bertrand Russell put it paradoxically in an epigram which has been quoted almost to death, but which retains its barb, "Mathematics may be defined as the subject in which we never know what we are talking about, nor whether what we are saying is true." The hypotheses from which mathematics proceeds need have no connection with the observable universe, and yet the deductions from those hypotheses will be perfectly sound mathematics, although they too are devoid of meaning for the observable universe. In his most important social theories Rousseau was a mathematician in this modern sense.

The men of the Eighteenth Century were unaware of the nature of mathematics, and consequently ascribed to demonstrations in the mathematical manner an objective validity they do not have. This colossal mistake was the foundation of Rousseau's popularity with the intellectuals of the French Revolution. To the non-intellectuals, following Rousseau through their brainier leaders, Jean Jacques' gospel of "pie on Earth, goodwill to all men," was the carrot before the donkey.

Science, on the other hand, is concerned first and last with facts—things that can be sifted from human experience, and checked against human experience, in the actual world. Between the first facts and the last may be long chains of mathematical reasoning, but these are not the concern of science. They are mere conveniences to obviate a welter of grammar and syntax in the common tongue.

Confronted with Uncle Tom, science would not dream of assuming that he was born anything but a slave, for it would first have ascertained his exact social status. Nor would it substitute for the factual existence of slavery an ideal non-existence of a colored man's Heaven in order to put the humble and meek Uncle Tom beyond reach of the arrogant and brutal Simon Legree's blacksnake. Science would endeavor to ascertain what the facts were, and then, if it found slavery, it might take as a provisional hypothesis the assumption that free men are happier than slaves. For the proper fee it might then see what could be done to make slaves free. No matter what it did or did not do, it would be almost certain to refrain from writing romantic preambles to constitutions for utopias.

The French revolutionists, who doted on Rousseau and absorbed his teachings—or thought they did—understood the distinction between science and mathematics perfectly

when faced with a practical application. When his great contributions to chemistry were urged to save Lavoisier from the guillotine, the intercessors were curtly told that "The Republic has no need of science." A truer thing was never said. Democracy as Rousseau imagined it was an affair of the heart, not of the head, except in so far as the head confirmed the heart by a sort of girlish geometry.

Facts and democracy had nothing to do with one another in the beginning. Unless they get together now, the chances of democracy keeping afloat much longer seem pretty slim. Lest I be accused of offering a lifebelt of my own for sale, I must add that an inflation of democracy with facts is not guaranteed by anybody to keep Rousseau's romantic belt afloat. We shall see the experiment actually being tried when we inspect science as a potential savior of humanity. I have nothing to sell. Pumping science into democracy might keep it afloat another hundred years for all that any mortal knows, or it might cause a blow-out that would sink us all in three seconds. Recent history would seem to favor the second possibility. Schemhamphoras only knows what will happen if some researching lunatic ever tries to put science into fascism or communism.

Rousseau undertook to straighten out the impossible economic and social muddle in which Europe—particularly France—found itself in the Eighteenth Century, as a sort of climax of climaxes to the superb muddle of the Middle Ages. Like more than one professed savior of humanity, Rousseau made a complete mess of his own material affairs. This is not necessarily in his disfavor; it merely suggests the interesting problem of seeking the coefficient of correlation between a teacher and his teachings. We shall come to Rousseau's teachings later, and we shall not commit the blunder of letting his messy life prejudice us against

his dogmas. It is quite conceivable that a paralyzed arthritic could produce a masterly manual of gymnastics.

2. PORTRAIT OF A REFORMER

Of French descent, Rousseau was born (1712) at Geneva into the Calvinist faith. His father seems to have been a man of no particular worth; his mother died when her great son was born. At the tender age of thirteen Jean Jacques was apprenticed to a notary. That was not too young in those days to enter upon one's lifework. The exasperated notary found the boy unteachable, with not a grain of sense in his head, and kicked him out. A brutal engraver next gave him a trial. From this very practical teacher, Rousseau learned a great deal that was later to come out in his educational theories in an over-compensating sentimentalism. By the age of sixteen (1728), Rousseau felt that his education was complete. The poor young devil escaped from his teacher and took to the open road. It is interesting to note that Rousseau started on his travels just a few months after Newton's death. What little the democratic revolutionists inspired by Rousseau's teachings learned of Newton's scientific philosophy they thoroughly misunderstood and grievously misapplied. Like their prophet they were congenital, incorrigible verbalists. Even Voltaire missed the significance of Newton, whom he idolized.

After his escape, Rousseau lived the adventurous life of an amorous vagabond. One of J. B. Locke's sweetest romances gives a sentimentalized version of this sort of life for adolescents of today, in which the wandering hero without a penny in his pocket marries the beautiful and wealthy lady who takes him on as a gardener or something of the sort. Rousseau preferred his mistresses already married. They were less expensive that way.

His first stroke of real luck came when a good but gullible Savoyard priest fell in love with this homeless Calvinist boy who yearned so wistfully to become a Catholic. At the priest's suggestion a passionately religious lady, only nine years older than Rousseau and living apart from her husband, took pity on the boy, and he took her in. Under her tutelage young Rousseau was completely emptied of Calvinism, refilled with Catholicism, and baptized in the lady's faith. But something must have gone wrong somewhere: the easy job Rousseau had hoped to get as a reward for virtue—or the lack of it—failed to materialize. Neither Protestant gentlemen nor Catholic ladies would assist him to earn his daily bread. His young and ardent patroness was through with him, temporarily.

At last, just as he was about to starve, a real job opened up before the young vagabond prince. A merchant's wife, whose vigorous, full-blooded husband happened to be away from home at the time, employed the lusty young rover first as footman, then as lackey, then as secretary, and finally as lord (not "in waiting") of the bedchamber. Rousseau tendered his resignation on the toe of a boot when the husband returned.

Remembering that the husband of Madame de Warens, the lady who had financed his baptism, was away from home permanently, Rousseau applied for a job with his benefactress, and got it. He was now nineteen, the pretty lady twenty-eight and apparently always in a chronic state of heat. Jean Jacques proved a most satisfactory employee in every respect till the insatiable lady discovered a more virile factotum, a wigmaker. After all, Jacques was only a boy.

Having learned a great deal for his age by this time, young Rousseau became a tutor. His total incompetence

and complete failure as a teacher of anything beyond a not-too-brotherly love were no doubt the inspiration of his revolutionary theories of pedagogy. They have had a tremendous influence on the pedagogical philosophy of American professors of education. Laboratory exercises of the kind Rousseau performed in preparation for his dissertation on education are not officially included in the modern curriculum, which is rather heavily loaded on the side of pure theory. A reform, however, is in progress. The younger generation is demanding less theory and more practical work.

At a looser end than usual after his pedagogical fiasco, Rousseau decided he might as well storm Paris as hang about the rural districts longer with his hands in his pockets. He had picked up something of music. At this stage of his career, Rousseau seems to have been an affable enough young man when affability could net him anything. Not till considerably later did he understand practical psychology well enough to know that the quickest way of getting something for nothing out of a certain class of people is to insult them outrageously. They think it is "cute" or "original," and sometimes it is, especially when condescending generosity to uncivilized boors costs them not only their money but their lives. Rousseau had not reached this stage yet. He smiled when he wangled introductions to prominent Parisians out of his simple friends. His conquest of Paris was not exactly startling or brilliant—the first time.

Somewhat of a sciolist and intellectual charlatan in general, Rousseau had invented a "new" scheme of musical notation. This he laid before the Paris Academy. The Academicians were not impressed. Their committee reported that Rousseau's system was neither new nor likely

to prove useful to anyone. Some people it is impossible to fool. They know their business. But Rousseau had learned enough about music to be able to transcribe it fairly accurately, and he made his meagre living doing that and secretarial work. Later, he mastered music sufficiently to compose creditably. Introverted quack though he undoubtedly was in some of his projects, Rousseau nevertheless was a man of parts when he got away from himself. Had Jean Jacques been born into comfortable circumstances, it is quite possible that George Washington and the fathers of our democracy would have left records amazingly different from those they did. Democracy, no less than the Almighty, moves in mysterious ways its wonders to perform.

While eking out this hand-to-mouth existence, Rousseau resided at a grubby little inn. There he was attracted by the singularly dull-witted, illiterate, pie-faced lump of a poor servant girl who drudged twenty hours a day trying unsuccessfully to keep the wretched hole habitable. Nobody seems to know why Rousseau married her. Can it have been out of pity? Five children, deserted and assigned successively to a foundling hospital by their independent proletarian father, blessed this marriage. The usual racket children make would have distracted the ambitious parent from his mission to humanity. Probably it was not pity after all that precipitated the espousal.

At the age of thirty-seven (1749), Rousseau quaffed his first heady draught of popularity. He became famous for his *Discourse on Arts and Sciences*, in which he proved mathematically, but without the technical use of symbols, that all literature, all arts, all culture, and all sciences, about which he knew nothing in particular, are the evidences and causes of social corruption. Jean Jacques not only possessed a rigidly logical mind; he was an extremely emotional

and deeply imaginative man. For this remarkable *Discourse* he was awarded a prize by the pundits of the Dijon Academy, men only a little more imaginative than himself.

Four years later, the now notorious Jean Jacques ravished the decadent royalists at Fontainebleau with an original opera. It cannot be said that he scorned any opportunity to advance his social theories and himself. The tableau of King and Court condescending to the tuneful ditties of the composer whose deeper chords were to cost them all their heads is as charmingly recorded for us as a Watteau afternoon of noble shepherds and shepherdesses on a delicate Gobelin tapestry. Rousseau was now a coming man. Shortly after his operatic success he arrived, with a smashing denunciation of all so-called civilized society, his epoch-breaking *Discourse on the Origin of Inequality*. Rousseau was always discoursing on something or other.

In this particular discourse it is proved mathematically (again!) that: the blessedly ignorant state of untutored savagery is the ideal social utopia; all civilization is a devolution, a degradation, and a corruption from that state of ignorant presumed innocence; all property is acquired and held only in virtue of high-handed robbery; all government is tyranny; all social legislation is unjust (he was certainly wrong there, compare Saint Augustine); and finally, as the early communists rediscovered, it is demonstrated that the possession of wealth is a crime. Some of these striking propositions—all proved by logic so close you cannot insert a razor blade in any joint of the argument—have an elusively familiar ring to us today. Where have we heard them? For the life of me I can't recall.

As beffited a professed disbeliever in civilized society, Jean Jacques now lived in squalor and affected a bearish uncouthness of speech and manner. He would have

nothing to do with the corrupt society he despised, except to sponge on it. To show his contempt for the graces of civilization, he presently accepted from his wealthy patroness of the moment a rent-free, comfortable cottage, whither he retired to live with his primitive wife and her bitch of a mother. Underlining his contempt, he became an intimate toady and hanger-on of the effete nobility in the persons of the Duke and Duchess of Luxemburg.

It was the era of shepherds and shepherdesses in pink and blue. Rousseau next catered to the pastoral fad of the day with *The New Héloïse*, a somewhat slushy masterpiece of romantic futility, in which he taught the blue ladies and pink gentlemen the alleged rights of the poor and the supposititious obligations of the rich. They thought it all perfectly charming.

Rousseau was now forty-eight and rapidly nearing the peak of his fame. Two years later he reached it, with *The Social Contract*, the Magna Carta, the Bill of Rights, and the Declaration of Independence, all rolled into one, of French-Revolutionary democracy. Two months later the hardy climber slipped from his popular eminence, almost breaking his ambitious neck with *Émile*. For the first time his enthusiastic friends among the nobility now learned what Rousseau really thought of all kings and all governments. The mouth they had been feeding suddenly bit them in their tenderest spot. Rousseau was that kind of man; the more you fed him the hungrier he became. The Church also squirmed under the rebel's attack—a mere fleabite, however, in comparison with the all-devouring Voltaire's. It was time now for Rousseau to get out, and he got out.

Frederick the Great next protected him at Neuchâtel. Frederick found his protégé amusing enough; the priest-

ridden villagers could not stomach the everlasting deism of their discoursing, botanizing, lace-making neighbor, and chased him out. By now Rousseau was fifty-two, a refugee from reactionaries who had made it possible for him to insult them by paying his way. Whither next? David Hume invited him to England and put him up. This is perhaps Hume's strongest claim to the title of philosopher.

Eighteen months of English freedom were enough for the refugee from Continental intolerance, and he returned to Paris, hobnobbing once more with noble friends in France, to earn a miserable living at his old trade of copying music. The persecution mania which had driven him from England steadily became more acute.

In his last work but one, the curious *Rousseau, judge of Jean Jacques*, his delusions and his paranoiac narcissism almost tempt one to believe that more than one of the lady friends of his youth must have given him something more than her simple love for him to remember her by. His mental health became so bad that he voluntarily sought asylum in a hospital. An admirer came to his rescue and, enduring brutal insults in silence, enabled the prophet of democracy to end his days peacefully—some believe by a bullet in the head—in a cosy cottage at Ermenonville. He was sixty-six when he died (1778).

All in all Jean Jacques had lived long enough. After him came the deluge which the Pompadour had prophesied. Rousseau's last work was the sentimentally beautiful *Reveries of a Solitary Walker*, a sweet close to a somewhat bitter life. But he did not walk alone. A ruthless army marched with him.

Rousseau's greatest contribution to the cause of democracy was the slogan which the French revolutionists took as their mouthful, "Liberty, Equality, and Fraternity." Not one of these three abstract nouns has any definite,

objective meaning in Rousseau's social philosophy. They were the bricks in the democratic lifebelt.

Is it credible that anything sensible could come out of a career like Rousseau's? Perhaps not, but we recall a similar question whose answer every person knows: "Can any good thing come out of Nazareth?"

From Rousseau's intellectual construction of an ideal society, and the date (1778) of his death, we get two strong hints for our inspection of democracy as a lifebelt. Democracy had the great disadvantage of being thrown into the water at a moment which was far more dangerously critical for all concerned than the manufacturers of the belt could possibly have imagined. They had done their enthusiastic best to produce something that would keep afloat in the stormiest weather as recorded in the statistics for the preceding two thousand years. But a storm was brewing just below the horizon whose like no mortal had ever dreamed, much less seen. The Industrial Revolution was something new in human history. It swelled to its full fury with cataclysmic abruptness, and that was one of its novel characteristics. There had been economic storms before, but nothing comparable to this.

Of course if we are the "this is the house that Jack built" kind of believers in social continuity, we can trace the storm clear back to the Great Rain which floated Noah's Ark off dry ground. We can do so, now. If the French revolutionists had been as foresighted as we now are in a backward sort of way, they could have designed their lifebelt in a shape to save us considerable embarrassment at this very moment. Even the stoutest-hearted among us are beginning to wonder whether the damned thing is going to keep afloat through the coming night. We hope that it will, for there is not a sounder belt in sight.

Cool-headed optimists declare that in case of dire ne-

cessity the thing can be patched, and are already furtively removing their elastic garters. Panicky pessimists wonder how on earth—or water—rubber, which is a scientific product the manufacturers knew nothing about, can be chewed up into a paste that will amalgamate with scholastic metaphysics. For despite the date of Rousseau's death, his social theories were conceived in the sin of the Middle Ages, and born in total ignorance of the scientific habit of thought which was so shortly to change the whole fabric of material civilization.

Democracy was launched three centuries too late or three decades too soon. But better too soon than never, say the optimists, provided we keep our heads and repair the damage due to inexperience before it is an hour too late. Most of us have grown rather attached to the leaky old thing, like a good silver dollar with a hole in it; and although some of us may be only so many barnacles impeding progress to the distant beach, we hope with the optimists and groan with the pessimists for a dry landing.

3. THE GOSPEL ACCORDING TO SAINT JEAN

For us today the most important aspect of Rousseau's work is the rigid cast it forced on social and economic practice. The specific dogmas of economic theory may be left to the natural processes of decay to rot and disappear, as all dogmas founded on unquestioning faith or pure reason sooner or later do. But the sinister practice of rationalizing our daydreams into seductive parodies of the world as it is must be given up deliberately if it is to be abandoned at all. An effort of the will in addition to medication is demanded if a drug addict is to be cured.

It does not follow, of course, that society will be cured of its tremors and hallucinations if it stops dreaming and

attempts to come to its senses. It may have none. That is one of the things we might try to ascertain objectively before recommending any remedy for our disorders. All we can say definitely is that no unbiassed attempt has as yet been made to find out how human beings in the mass react to social stimuli. Instead we have an incubus of pure verbalism in the great tradition of Thomas Aquinas; and many of our more devout brothers would joyfully burn at the stake any timid soul who ventured to suggest that some of the resounding theorems of classical economics and sociology are unadulterated theology and nothing more.

Who has not endured tearful exhortations by old gentlemen with streaming eyes and a tremble in the voice, beseeching us in the name of our fathers to adhere to that which is ancient and flee from that which is more recent than the Eighteenth Century? Some of us have even cried openly and unashamed with them. Or who has not marvelled at the impassioned declamations of fascist or communist fanatics, aflame with a zeal that can only be called holy, calling upon us to repent and accept their new salvations, simply because they are said to be new? Some of us are converted and embrace the resurrected faiths; others of us leave the tabernacle of pure reason wondering if our race is so damned stupid it can never learn anything.

The pattern of our stupidity has not varied in two thousand years, although some might not recognize the old design behind the flashier colors that came in with coal tar dyes. Always in the past we have been deceived in the same way, and always, after decades or centuries of kicking against the pricks, we have admitted that going forward is less hard on our legs than trying to back the ever-increasing load uphill to Olympus or the City of God. Then invariably we beg to be sold again to the highest bidder. A

shiny new creed, glittering with gaudy abstractions relevant to no ascertained fact on earth, changes hands, and once more we are in the shafts like the unteachable asses we are.

Rousseau's attack on the glaring evils of his time illustrates perfectly the advance of reason and the retreat of fact. The condition of the mass of the people in his day was appalling. Even conservative observers, in no way humanitarians or radicals, were struck by the marked superiority of the beasts over the peasants who brutally mistreated them. Men had sunk below savagery to a state that had no name.

One terrible picture by a contemporary writer makes Edwin Markham's "Man with the Hoe" shine out in contrast like the heroic statue of a Greek god. This writer tells how on a drive round the countryside he noticed a mass of refuse barely distinguishable from the heavily manured soil, and saw it slowly move. To his amazement the mass lumberingly stood erect and glared at him in his coach with eyes that might once have been human but no longer were. It was a man. The shocked aristocrat ordered his coachman to drive faster. But the wind of a horse is blown before a man's, in the long run, and that slow-moving mass of manure and human flesh at last overtook the coach.

Rousseau saw all this, and worse, with his own eyes. He was a humane man in the large, whatever he may have been in the small. Logic and abstract reason were the implements he chose to lessen the gulf between equality and inequality. An almost erotic love of natural beauty seduced him into sentimentalizing over an ideal state of primitive society that never existed; and his imaginary innocents beguiled the jaded sophisticates, who rode in coaches, to play the pastoral symphony in meadows swept clean of manure by their servants, a little longer. Again, seeing

with his own eyes the greed, the lechery, the dirt, and the callous indifference to the degradation of the peasantry that characterized most of the rural priests, and observing the utter corruption of the custodians of religion in high places, Rousseau deduced that a new religion founded on a stale set of unverifiable hypotheses would correct the evils, and he went up and down France preaching the gospel of deism. So too, ignoring the obvious facts that Greece was dead and Rome long since rotten, he drew heavily on classical theories of sociology to dress up his own imaginings in a semblance of wisdom acceptable to the dilettante intellectualism of his own age—the appropriately named “Age of Reason.”

Not once did he appeal to fact, except emotionally, as in the stirring metaphor about man being everywhere in chains; and when he did so appeal, the cogency of his appeal was automatically nullified by a meaningless or unverifiable proposition uttered in the same breath. His uncritical habit of believing any absurdity of traditional history or classical myth that would provide an imposing major premise for his social syllogisms, decoyed him into distortions of facts that even he might have observed. His was the incredible stupidity of the learned, and as his learning was largely re-cut to fit the ever-swelling contours of his escapism, he bulged over two continents in a new religion. But for his impenetrability to all hard, sharp facts, he might have been punctured and exploded by any one of hundreds of facts before his co-religionists shouted “Home, Alphonse!” to the coachmen of the tumbrils.

Rousseau himself is perhaps not to be credited with what long since became a fundamental proposition of democratic theory: if one hundred men who know nothing of carpentry cannot build a house fit for human beings to live in, one hundred million precisely like them in all respects can.

In more general terms; what one cannot do decently, several ones can do superlatively well. It follows by an immediate extension of the principle to include all numbers —permissible here, since we are doing mathematics now, as Rousseau did, without any regard to facts—it follows, I say, that one dictator is better than none. This is merely the German or Italian translation of the British theorem that one monarch is better than none. In Russian, the official theorem reads: "One hundred and seventy million dictators are better than one." The unofficial translation of the last is made in either Italian or German, which only a negligible handful of the hundred and seventy million have been taught to read.

A popular American deduction from the general principle is expressed in the formula: "Every man a king." Immigrants who understand the American language none too well sometimes confuse the last with "Every man for himself, and Devil take the hindmost," a false proposition which not even the ruggedest logician can deduce from Rousseau's axioms. As an item of some historical interest, it is on record that a few backward boys, who were stopped in their education by their inability to master first-grade arithmetic, insist that the correct deduction is one or the other of the two closely related propositions:

- (A) "I owe the public nothing;"
- (B) "The public be damned."

Now, all of these propositions are perfectly sound deductions from the grand assumptions of Rousseau's humanitarian theories. Propositions no less strikingly beautiful than these were actually deduced by him or by his disciples from the fluid principles on which Rousseau built. It is perhaps superfluous to suggest once more, for about the eighth time, that these brilliant deductions were possible,

and are today mathematically exact, only because the initial assumptions had nothing whatever to do with observable fact. The whole nexus was in Rousseau's head and nowhere else—till it got into ours.

Perhaps the reader would be interested in seeing a definite, specific theorem of the same general kind as those recalled above. Hundreds could easily be exhibited. The majority of those that I have in mind are too close to the present and too near home to be displayed indiscriminately to the public gaze. Somebody might begin throwing bricks and smashing plate glass cases, when the policeman would have to be called to prevent a riot, and there is no telling whose shins might be tickled with a nightstick, or whose scalp laid open. So at the risk of retailing an old chestnut, I shall play safe and extract one perfect gem of a theorem from that inexhaustible treasure chest of human stupidity, the history of the World War. I can guarantee this to be one hundred per cent authentic, although it will not be found in the official histories. I have added nothing to the simple facts, nor have I abstracted anything therefrom. This gem illustrates the well known proposition—which indeed may be false—that nearly all good democrats dearly hate an expert.

When England had its back to the wall and its desperate men were being blown to hell in battalions by the German artillery because the British had only a few inferior shells or none to fire back, it dawned on the high command after many months of total darkness that more British shells might reverse the slaughter ratio, or at least tend to reduce it to unity. That simple conclusion reached, it only remained to manufacture the shells.

Now shells are filled with high explosives, and the manufacture of high explosives is a technical chemical industry.

Who should be put in charge of the manufacture of the urgently needed high explosives? A chemist? By no means. A lawyer. And why? Because the technical chemical knowledge of an expert on the manufacture of high explosives might cloud the impartiality of his judgment in organizing and supervising the actual manufacture. It was not a question of appointing some expert on personnel relations to coordinate different factories, or even the work of a single factory; it was definitely a problem of finding the right man to supervise the technical chemistry. A lawyer, obviously, was the democratic solution.

It seems incredible that any sane body of legislators could arrive at such a solution in such a crisis, but their process of arriving is even more incredible. Here it is.

The complete chemical ignorance of the lawyer would enable him to see and solve chemical difficulties which would never occur to a technically trained chemist, or if they did occur to him, they would remain unsolved owing to the blockage caused by too much knowledge of the chemistry of high explosives. As a final touch of fatuity that would pass belief were it not a fact, the legislators recommended that the lawyer appointed should have enjoyed a sound classical education, because such an education—Plato's dialogues and the rest—is the best possible training in impartiality of judgment. The committee making this recommendation had all enjoyed sound classical educations untainted by chemistry or any other science.

The lawyer was on the verge of taking office when front-line experts threatened to come home and do some research in high explosives on their own account unless a technically trained man were appointed. A chemist got the job.

All this is a matter of record, although not in the "England expects every man this day to do his duty" type of history. It illustrates several of the fundamental theorems deduced

by Rousseau from his assumptions. Three will do. First: all men are equal. Therefore a lawyer is equal to a chemist. Rousseau would not have admitted this; his successors have. Second: what one man can do, another can. Mathematical readers will recall a closely similar theorem by Sylvanus Thompson: "What one fool can do, another can." This theorem, unfortunately, is factually true in all democracies. Third: miracles can be accomplished by fiat. If, for example, an exceptionally severe and prolonged winter kills two thirds of the wheat planted to produce a normal crop under normal conditions; and if the government has ordered a normal crop for the disastrous year; then, the meagre one third of a crop actually produced by the thwarted soil can be commanded to treble itself. If the recalcitrant agriculturalists protest that governmental decree cannot repeal the past, or change the laws of nature, or falsify common arithmetic, they may be shot as "wreckers of the current Five Year Plan," as a sort of sacrifice to the goddess of fertility.

The last, I know, is an extreme instance; but if anything reported out of the country where this happened can be believed—even when reported by the responsible officials themselves, as this was—this thing happened. Possibly the whole story is a myth born of malicious propaganda. Let us give whoever wants it the benefit of the doubt, and look a little nearer home at the wilderness of laws enacted by legal minds in total ignorance of facts that cannot be legislated out of existence. But I hear the policeman's nightstick tapping a tattoo on the sidewalk, and we must not loiter. A dignified retreat to the Eighteenth Century is in order. We depart, chanting, "Liberty, Equality, and Fraternity"—the whole gospel according to Saint Jean of Geneva.

4. BRICKS IN THE LIFE BELT

Here we are, safe in the arms of Rousseau once more. I shall call whatever is made of abstractions, or of metaphysics, or of wishful thinking, or of anything but verifiable facts, a brick, and I shall briefly exhibit the three in Rousseau's lifebelt.

Rousseau's first escape was from the perfectionists. For some reason that is not clear, when we remember that man in the field, the leading intellectuals of the Eighteenth Century believed that indefinitely continued progress of mankind to an ever higher state of material and spiritual welfare was the destiny of the human race. The evidences of progress were all about them, they declared, and waved a vague arm toward their groaning bookshelves. It was not books or belly that they needed, but brains. Perhaps of all the masterpieces on those shelves half a dozen, certainly not more, have had any influence at all on "progress." So much for the intellectuals.

Rousseau believed they were talking rot, and said so. What he went on to say, was likewise rot, as we now know. The present was bad, which was obvious; the past had been all good, which was nonsense. Instead of striving for the perfectibility which the intellectuals announced was just round the corner, Jean Jacques said human society should take a long walk back into the past.

Change of some sort was inevitable. Rousseau agreed with the intellectuals on that. They were all for conserving the gains so far made toward perfectibility, and wished to transplant them to the paradise just ahead without tearing society up by the roots. Rousseau said their plan was impracticable, and subsequent events proved that he was at least partly right. A vast acreage of society was

torn up by the roots before the revolutionists tried once more to propagate the old favorites of their grandmothers' gardens.

But Rousseau's second proposition, that because the present was a howling wilderness the past must have been a dulcet paradise, was as brilliant a non-sequitur as ever a man took for the foundation of a philosophy. This was escapism with a vengeance, and its ramifications rendered futile or malignant the social philosophy erected upon it.

Rousseau was not entirely to blame for swallowing whole the myth that there had been a Golden Age. The ancient writings were full of it, not in the cruder forms like the Garden of Eden or Atlantis, but in the glaring omissions of the classical authors. There is no paradox here; the ancients of Greece and Rome were not particularly interested in the lives and doings of the common people, except as breeders of soldiers and slaves; and by coolly omitting half the story they made a very human society, with its full share of dirt and degradation, look like a colony of gods on a tropical island. Seeing what his romantic vision wished to see, Rousseau turned back to this purely fictitious past. His Greece and Rome bore as little resemblance to the real thing as a novel of high life in Palm Beach and Long Island bears to the American scene as a whole.

Not content with this fantastic myth, Rousseau proceeded by irreproachable logic to deduce that if the near past was better than the present, then the very distant past must have been better than anything that followed it. Hence primitive man—the savage, in short—must be the most nearly perfect and happiest of all men, and savage society the ideal of contentment.

Here Rousseau was the finished mediaeval theologian. Without even dreaming of finding out what were the facts

regarding savages and the way they live, Rousseau gave his imagination free reign and created a baseless dogma. It is a sufficient commentary on the temper of his age of reason to recall that he persuaded thousands of people who thought themselves intelligent to accept this creation of his romantic fantasy without question. Today we should send out expeditions in several directions to ascertain the facts. But, like Rousseau, we do not send out anybody to discover what facts there may or may not be behind the cherished dogmas of our social and economic creeds. Calmly objective where dead matter is concerned, we fight like a bobcat with a litter of kittens to defend our human institutions from the profanations of impartial investigation.

This first assumption of Rousseau's was perhaps less important for his actual philosophy—when his followers really began to march—than the space we have given it would appear to indicate. Its importance is the indication it affords of his whole approach to any question: assume, deduce, believe; make no attempt to ascertain the facts, even when these are available with but little effort; convince others by pure reason alone; never experiment. In essence this was the early democratic method. Some say it is also the socialistic and the communistic, except possibly for the last. They may be right, as experiment in a democracy is usually condemned as communistic. "Jacobite" was the word in Rousseau's era.

It would be unfair to quote Rousseau against himself, and we shall not do so to any extent. Yet his own work too often illustrates the truth of his theorem that "a thinking man is a depraved animal." This is altogether too mild. When a man believes that by taking thought he can add a cubit to his stature, as the early democrats believed, or when he tries to force society into his ideal thinking machine,

he is not an animal at all, but a plain damned fool. The animals, as we have seen, do not enjoy the human privilege of damnation.

Thinking furiously from his sentimental hypothesis that the "natural" state of man is "freedom," Rousseau ties himself into metaphysical knots to give freedom a meaning consistent with the restraints imposed in any civilized human society, say in time of war or during a period of great economic stress. The outcome is a gorgeous fabric of words of precisely the same pattern as Saint Augustine's "City of God," or the rationalization of the mysteries of religion by Saint Thomas Aquinas. And like those iridescent masterpieces of an older but no purer verbalism, Rousseau's to this day inspires endless debates over abstractions whose meanings, even in the theorems of democratic theology, are fluent and ambiguous to the point of sheer nonsense.

The questions raised by the depraved animals—to use Rousseau's designation—participating in these logomachies are improperly put, like "how wet is democracy?", or unsolvable within the system, or out of it, like "why is communism wetter than democracy?"

Consider, for example, Rousseau's capital problem: "To find a form of association capable of defending and protecting with the whole common force the person and goods of every associate, and of such a nature that each, uniting himself with all, may still obey only himself, and remain as free as before."

This sounds like an invitation to a game of hunt the slipper, but it is in fact the spearhead of the great verbalist's attack on his paradox that "man is born free, and everywhere he is in chains." The paradox does not exist in the real world, because it is compounded of a hypothesis con-

tradicted by facts and an emotional generalization. Yet we have a "feeling" that a profoundly important and extremely difficult problem has been clearly stated, and we patiently follow the thoughtful mathematician through theorem after theorem, learning much, it is true, but not a single thing that could be tested objectively. We begin to suspect that the grand problem is only a pseudo-problem after all, incapable of solution, and we wonder whether a simple, direct question to the nature Rousseau was always romancing about might not get us farther. But to ask such a question we should have to deny the validity of the whole verbal approach to real social problems, and this would be a political blasphemy.

If the spearhead is not enough to indicate the nature of the attack and the outcome of the battle, the main bastion assaulted may suffice: "Can there be in the civil order any sure and certain rule of administration, taking men as they are and laws as they might be?" In other words, if you are the only son of your parents, do you think your brother would like cheese if you had a brother? Not even the profoundest problems of theology ever gave the chattersome sons and daughters of the anthropoid apes a richer opportunity for interminable chatter than this wild question of Rousseau's. The heated exhalations of all that theological talk kept Saint Augustine's lifebelt afloat a thousand years. How much longer is pure unadulterated verbalism going to float our economic and social theories? Perhaps forever, and a thousand years from now our descendants may be "wafted o'er a perfumed sea" to the beautiful isle of their roseate dreams. But then again, perhaps not. A little more air in the tube, and the whole thing may blow up in its inflators' faces.

As with Augustine's dream City, the systematic ambiguity

of Rousseau's great citadel is the central tower of its impregnable strength and the source of its immortality—so long as it is attacked only with the same kind of weapons as those employed by its defenders. But why should anyone, least of all a sincere democrat, wish to attack it? For a very simple reason: dispassionate observation shows us that nothing which is built entirely of words on a foundation of assumptions which advancing knowledge has rendered obsolete, can contribute in any vital way to the happiness of men who cannot live by wind and water alone.

But again we must repeat that there is no evidence whatever in support of some attack other than the purely verbal on social problems proving more effective. No such attack has as yet developed—with a possible exception to be noted later. If any considerable number of human beings ever does decide what sort of a society it really wants, concerted action to secure that society may possibly develop, but we do not know that it will. In fact we know next to nothing about human behavior, even our individual own. That is one of the things it might be illuminating to investigate.

The men of the Eighteenth Century knew all about human behavior. Much of their knowledge survives in our own social and economic theories, dogmatic, absolute, unassailable. They were particularly erudite in the province of mass-reactions to economic and political stimuli. They also knew all about what people want, how to get it for them, and what it will do to the happiness of the recipients.

In addition to all this profound knowledge, they knew that every human being—a homicidal maniac, or the owner of a chain of sweatshops, say—has an inalienable right to life, liberty, and the pursuit of happiness. By definition

all three of these abstract nouns denote "good," although the second is difficult to clarify, while the first is often alienated by capital punishment, and the third is a matter of taste, usually that of someone who is fairly happy himself and therefore is entitled to dictate the happiness of others. Notice, however, that man has not an inalienable right to happiness, but merely to the pursuit of happiness. As Mrs. Beaton put it in her immortal recipe for jugged hare, "First catch your hare." However, as Kipling proved, "the pleasure of pursuit is in pursuing," so you will not be unhappy if you fail to catch your hare.

As if all these great hypotheses of social theory and practice were not enough for those divers of the Eighteenth Century to fetch up at one scoop from the bottomless well of truth, they presented the human race with two further abstractions, equality and fraternity.

The first of these cost them no end of words to explain. But finally they succeeded, by explaining away inequality which, as everyone knew, was the opposite of equality. From this to the mystical Urim and Thummim of sacred democratic sociology may seem a longish step, but those hardy pioneers took it in one skip: "Government with the consent of the governed." Thus, as we already saw some way back, in a democracy every man is a king. That his kingdom may often be only a dunghill is beside the point. Like the independent rooster he is, the democratic king can crow to his lungs' content, and keep his wealthier neighbors awake half the night. The profane language they use about him and his kingdom only makes him crow the louder, until he becomes an intolerable nuisance, and the policeman is requested to cut his throat and remove the offending dunghill.

Fraternity also is another of those resonant abstractions

that we believe in but seldom do when it comes to a simple practical test. Do you really love your neighbor? To love your neighbor is the acid test of fraternity. Anyone can love the man who lives two doors away; but it takes a real democrat, and not a theoretical abstraction of a democrat, to love the man who lives next door. Do you want to fall on his neck with a kiss, or with an axe, when his chickens nip off all your zinnias that have just come up, or his untamed savages of kids yell all day under your windows?

As some heartless cynic put it, the man next door is your greatest enemy, but the man just beyond him your greatest friend, because you and he have an enemy in common. Sometimes we cannot even love the man next door but one, or a block away. In fact love seems to fall off like universal gravitation, inversely as the square of the distance, and "foreign devils" or "those damned foreigners" revolve in dark and chilly orbits billions of miles from the cheering sun of our fraternal love. When the war clouds gather, the direction of gravitation is reversed, and attraction becomes repulsion. With the passing of the clouds, peace is restored and gravitation instantly returns to normalcy. But those who lost the war are ejected from the peace conference with force just sufficient to start them off on hyperbolic orbits. Thenceforth and forevermore they are hated by everybody, themselves included.

Democracy was to have regenerated man, just as religion was to have regenerated him. Did it? I do not profess to know. How much of material progress, which anyone but a fanatic against all social organization must admit has surpassed a thousandfold what the most imaginative of the perfectionists would have dreamed possible in less than two centuries, how much of this tangible betterment is to be credited to the democratic form of government? Or is this

question, like many of those the men of the Eighteenth Century asked, meaningless and therefore unanswerable? I rather suspect that it is, and likewise for the next.

How much of the distress, spiritual as well as material, which anyone but a blind imbecile must observe all about him, can be charged up to democracy? And further, has the gain been greater than the loss? The last sounds as if it were a sensible question, and perhaps we feel what we wish to know; nevertheless this question, often asked and as often answered, has no meaning whatever. Which is greater, three dozen pineapples, or half a pound of piety? We seem to be landing in a muddle. According to some, this is the inevitable outcome of all democratic enquiries. However that may be, some sort of an accounting seems about due.

As many of my friends rationalize their hard-shelled prejudices into holy hand-grenades to blast all whose outward squint on reality is less crooked than their own to everlasting perdition and beyond, I shall not venture to add up the score myself. Indeed, I believe all that kind of arithmetic to be more suitable to a prayer meeting or a political rally than to any sober attempt to put two and two together so as to avoid infinity. Accordingly I shall pass the pencil and paper over to a commentator on current affairs, whose even temper, well balanced judgment, and forthright truthfulness are the envy and admiration of all those capable of envying and admiring these qualities, and the reddest of red rags to all the bulls of all colors who wish to crash through every fence between their own fields and the public domain: Dorothy Thompson. The following paragraph appeared in June, 1937.

“Masses of unskilled workers have remained too long outside the pattern of American life. They are, in many

parts of the country, atrociously housed. In our large municipalities they have been cynically manipulated by the machines of both major parties, for interests of their own. In our Legislatures and Congress they have been without adequate representation. Their weak attempt to organize has been sabotaged, both by the employers and by the craft unions, representing the aristocracy of labor. They have been bullied and assassinated by the police. They have been unprotected against unemployment, and early retirement from machine industry, which favors the young. They have been exploited by high-pressure statesmanship. And now it looks as though they were being urged into a dangerous fight by cracked-brained people who call themselves their friends."

A good many of Miss Thompson's shots might have been fired by Jean Jacques himself. Between the death of Rousseau and the date of Miss Thompson's offensive, lie 159 years of democracy. It is remarkable that powder could keep dry so long. From this the hasty might infer that the Rousseau's lifebelt has remained afloat all these years, and has not let down the galley slaves in chains who clung to it as their last hope. Certainly it has not let *all* of us down, any more than religion has. Otherwise the commentator herself would have been drowned or shot weeks ago. What would happen to an equally frank reporter in Germany? Or in Russia? Or in Japan? What did happen to Miss Thompson herself in Germany? She was thrown out on her ear, being immune to less courteous treatment simply because she was a citizen of the democratic U. S. A.

But, granting all this, any fair-minded person must admit that if Miss Thompson's charges are true, then the democratic lifebelt of Jean Jacques Rousseau has let us down

a very long way indeed. Are the charges true? I do not know, as I am one of the privileged class, to which the commentator herself belongs, who has never had anything but a fair trial and the kindest treatment from democratic institutions. However, I am willing to take the lady's word for the truth of her allegations. She could not get by with them, even in our own tolerant democracy, if they were not true.

What is the root of the trouble? Not being a manufacturer of lifebelts myself, I cannot say. So I shall hazard a guess.

First, a lifebelt in the the sense we have been using, is not a puny little lozenge for the salvation of a dozen or two skeptical philosophers or disgruntled mystics. Unless it is broad enough to accommodate at least half the population of a major liner, it is not a lifebelt worth considering in a real emergency. Happiness and decency for at least half the people, and not merely for the officers (including the purser), is a minimum specification which any honestly constructed lifesaver must meet. Some would demand security for everybody, but such people are generally utopians who believe that lifebelts are made of moonlight and roses. Half a step forward every century will get us farther by A. D. 2000 than two steps backward every decade.

Now it is my belief that more than half of any given population are incorrigible optimists—wishes-thinkers. This majority is offered a belt that will take them safely across a duckpond, in summer say, and instantly they fall all over it, yelling for a safe passage across the Atlantic Ocean in midwinter. They expect too much, and frequently get nothing at all but a thorough wetting. Then—if they are still alive after the disaster—they begin abusing the officers for not having told them that water is wet.

We are always being let down, and it is our ingrained habit of believing more than is warranted by the simplest observation of things as they are, and not as we might wish them to be, that causes the let-down. Belief—credulity—was once a highly esteemed virtue. To call a man a disbeliever was to damn him outright. Almost everywhere, almost always, and almost by all, those who have appealed to facts have been called disbelievers. Dare to disbelieve, dare to question, and be damned.

Nobody, of course, is free of all beliefs. The survivors from the Middle Ages who swarm in our midst believe in logic, reason, and abstractions as the infallible means of salvation. They frequently succeed in launching lifebelts that carry hundreds of thousands to the bottom. The followers of Galileo believe in objective experiment; and in their own domain, and over their own sea, their argosies keep crowding in, laden with all manner of strange good things and stranger evil. They have not yet ventured on the uncharted sea that swallowed up Saint Augustine and Rousseau. Some believe they will bring back even greater riches than they ever have yet when they do venture; others prophesy a freight of evil that will destroy us all. But these are only beliefs, and as such, elevating or depressing, but in themselves essentially worthless. Neither of itself can generate action.

5. THE GOSPEL ACCORDING TO SAINT MARX

Before relinquishing Saint Jean's lifesaver, we may take a short look at the thing being put together over in Russia by the followers of Saint Marx. Millions are already clinging to it. Now and then some avaricious Kulak or bourgeois intellectual lets go with a splash that is heard from Moscow to San Diego—where at this moment, by the way, three modest aviators with a most captivating sense

of humor are being lionized for their non-stop flight from Moscow to San Jacinto via the North Pole—but the vast majority seem to be hanging on somehow.

Are they going to reach dry land? Who knows? A skeptic familiar with the gospels of the two great saints might have certain doubts and reservations. There are so many striking resemblances between the two gospels and their prophets. For example, nobody who can follow convoluted German in an English translation need doubt for a moment that Karl Marx is a very great logician. As a master of pure reason, Marx stands shoulder to shoulder with the tallest giants of the Eighteenth Century, and even, in some lights, seems to reach the stature of Saint Thomas Aquinas himself. Rousseau had the handicap of not foreseeing the real industrial revolution, although it was already taking shape all about him when he died; Marx could look back on it, and reason about it and the growth of capitalism which it fostered. If Marx proceeded from assumptions in agreement with facts, the new gospel may do something spectacular yet. But its great wealth of reasoning makes it look suspiciously like an involved German translation of the limpidly simple French original.

The new seems to suffer in addition from a peculiar disorder, not unlike the mediaeval theology, with which the old was not afflicted. On the principle of one fever roasting out another, dialectical materialism, as the new disorder is called, may reduce the temperature of Liberty, Equality, and Fraternity below the danger point. The earnest doctors in their long red smocks assure the world that the patient is already through convalescence and going about his master's business. The recent relapse in which he shot sixteen of his dearest friends and several hundred of his merest acquaintances, is considered spectacular but not

serious. The proper apologies have already been made by the proper apologists. Some even go so far as to assert that "the true, the blushful" communism has not yet been tried out anywhere, even in Russia. Not being a communist, I cannot evaluate this striking apology.

Now, what would be the appropriate attitude for a follower of Galileo to assume in these circumstances, or even for Galileo himself? Would he ascend the pulpit or the platform and denounce? No. Would he mount a soapbox at the street-corner and sing hymns of praise in a falsetto ecstasy? No. He would glance out of his laboratory window and note with satisfaction that some other worker was busily engaged in an extremely difficult and extremely dangerous experiment he had often wanted to try himself. As a precaution against possible mishaps he might close the steel shutters before going on with his own work. Then he would refresh himself with a drink of cold water—not fire, because he is neither an eater nor a drinker of fire—and pick up the test tube he had laid down before going to the window. If he were an emotional man as well as a scientist, he might sigh, "Well, that's one experiment I shan't have to do myself. I wonder how it will come out."

Looking back now over the muddle inspired by Rousseau's mystical idealism, we may ask how much of it was due to the peculiarly mediaeval cast of his mind. It seems fairly obvious (in spite of his amateur botany) that he was as innocent as a Mongoloid imbecile of any scientific habits whatever. The like was true of his enthusiastic disciples, all men of eloquent good will, no doubt, but all saturated with a superstitious reverence for scientifically meaningless abstractions. One and all they were as narrowly religious-minded in their blind devotion to logic and reason, and in their contempt for facts in favor of wished-for fancies, as

were good Saints Augustine and Thomas Aquinas themselves. Because these reforming zealots of the Eighteenth Century *wished* society to be thus-and-so, by their Eternal God of Pure Reason is *was* thus-and-so—in their heads.

Rousseau's rich legacy of glittering abstractions helped to finance the next disastrous orgy of metaphysical speculation. With a scientific civilization crystallizing all about them, the great classical economists of the Industrial Revolution turned their faces to the past, and chanted mediaeval logic and reason at their rapt democratic congregations. Not one of these infallible popes of economic mysticism had a scintilla of the scientific spirit. Their celestial mission was not so much to generate muddles themselves, as to rationalize and sanctify the very material messes made by barbarous converts to Rousseau's savage ideal of Liberty.

Unfortunately for the mass of mankind, three tidal waves of social "progress" started simultaneously within a decade or two on either side of the year 1800: Rousseau's mystical "Liberty, Equality, and Fraternity"; the wholesale introduction of machinery into industry; and the new economic metaphysics devised to reconcile Liberty, machines, and mere human beings in a sort of ideally squared circle embracing them all. The outcome was a spectacular wreck. This triple disaster is the object of our next inspection.

Chapter VII

AT IT AGAIN

Liberty, I am told, is a divine thing. Liberty, when it becomes the "Liberty to die by starvation," is not so divine.—
CARLYLE.

I. SUNK

THOSE three gallant drummer boys of the French Revolution, Liberty, Equality, and Fraternity, were shortly followed by the grand army of rugged individualists and ragged individuals of the Industrial Revolution. The year, 1776, which saw the signing of our own Declaration of Independence, saw also the publication of Adam Smith's *Inquiry into the Nature and Causes of the Wealth of Nations*, the holy bible of "laissez faire" and free competition in trade and industry. Smith, it may be noted in passing, was first a professor of logic, then of "moral philosophy."

Jean Jacques had not seen the pretty girl waiting round the corner to run away with his three gallant boys, when they were supposed to be going up to the front to lead the Common People to victory. Innocent young Industry contracted a sort of polyandrous union with the three drummers of Democracy, and had so many children that neither she nor the poorhouse knew what to do with them. Finally it was decided to drown all but one out of every litter, like kittens or puppies, and keep the remaining one to increase the family revenue as a chimney-sweep's boy, or a coal-picker, or something equally unremunerative.

Of course the last is an exaggeration. The too-numerous children were not drowned. They were very humanely permitted to die of overwork and undernourishment—to starve to death, in short. But nothing the parish authorities could do stopped that incorrigibly prolific woman from having more children than she could take care of. The fathers might have been forced to contribute to the support of their offspring; but they were all three out of work, and had been for years and years and years, and were bringing in nothing at all.

Guinea pigs dropped, exhausted, and white rats threw up their tails. They were out of competition. The human race had won. And what a race! Biologists said they had never seen anything like it—undersized, yellow-skinned or gray-skinned, dirty, rachitic, sore-eyed, old at thirty, gloomy, brutal when fed and apathetic when starved, and yet, in spite of all this, able to exist on practically nothing and to produce great wealth by the copious exudations of their sweat-glands. They were superb.

A photographic likeness of the Industrial Revolution, true to the minutest detail, would out-fantasy the most fantastic imaginings of a diseased mind. Sober histories of that Golden Age of human stupidity, backed by bales of legal and parliamentary testimony, read like bad parodies of Dante's Inferno. Here was hell on earth at last, and evil unmitigated for almost all men enslaved to industry and trade. A parody exaggerates some feature of the thing mocked, and the better the parody the more subtle the departure from an exact likeness. There was nothing subtle about the Industrial Revolution. And, as usual, pure reason sat scribbling away in its cloister, rationalizing patent facts out of existence and inventing absurd hypotheses from which to deduce new "laws of nature" for the subjugation of mankind.

Almost at its inception, economic theory was indistinguishable from mediaeval theology. The grand old dogmas of "divine necessity," to be sustained and justified presently by perversions of the new doctrine of evolution, ruled the filthy roost once more, crowing that they who had been thought dead and buried had merely been sleeping. But they had at last learned something—or dreamed it in their uneasy sleep. They now called their metaphysics a science.

Saint Augustine gave thanks to God. Thomas Aquinas thumbed through folio after folio of his celestial mathematics, checking one theorem after another of the new theology against the old, and finding all just. Rousseau stood open-mouthed and amazed as he watched the breath of freedom solidify into bricks and carry his lifebelt to the bottom. Galileo turned uneasily in his grave, muttering, "And still it moves," as he watched the corpse of the Church going about its business as usual in his nightmare.

In fields, in factories, and in mines the new race of free men, women, and children worked out the primeval curse in the sweat of their faces, eating half a crust of bread when they could get it, for fourteen, sixteen, or eighteen hours sweating a day, and thankfully going empty to bed under a few handfuls of dirty rags when trade decreed a "depression." A new sin appeared on the books and was charged to the hungry. Full-bellies rumbled portentously about the iniquity of the "materialism" now rampant among the ever-growing population of empty-bellies, and prescribed copious injections of idealism as the only remedy to save society from slipping into an early grave and eternal damnation.

All this was over a century ago. I have been describing conditions as they existed shortly after the first mild impact of invention doubled civilization up with almost a knock-out blow to the belly. As in describing the first impact of science on tradition, in Galileo's time, I shall continue in the

following chapter with a few exhibits of this first impact of the art of invention. All of these monstrosities likewise were pickled or stuffed before our fathers were born, or even before your grandfathers were, if you are still on the sunny side of thirty. So once again, as in the case of ecclesiastical stupidity, we shall be able to enjoy these quaint relics of economic barbarism in the museum of human stupidity without working ourselves up into a lather of indignation. There will be no temptation for anyone to smash any glass while viewing the exhibits. If the policeman wishes to go out and beg himself a schooner of beer while we are strolling through, he may do so in complete confidence. Nobody will report him, and he will find everything in perfect order when he returns.

I fully realize, however, that the new linoleum we shall track with our dusty shoes is holy ground, and that we had better make our inspection barefooted or in our socks. That this precaution is not wholly superfluous may be seen from a recent fracas with the janitor, who assaulted an inoffensive visitor to the museum while the policeman was out getting drunk. If the tourist had refrained from entering the museum at all, the janitor of course would have had no mess to clean up. But the poor innocent simply could not keep out of the fascinating edifice, and left his dusty tracks all over the nice clean floor.

2. HOLY GROUND

The assault to which I have just alluded took place in one of our most progressive cities with a population of several hundred thousand. In this city there is a very flourishing university, supported by the State, and an even more flourishing Chamber of Commerce, supported wholly by its own rugged initiative. Naturally, the Chamber is some-

what sensitive about paying tribute, levied in the form of taxes, to the support of the university which, it hears, is a hive of radicals who are fanatics for facts and rather indifferent to nearly everything else.

Now, there are two words in the English language which it is unlawful to join in wedlock before the Chamber: "industry" and "revolution." Yet, here at the university, right under their noses, the marriage was being consummated. An old gentleman of nearly seventy was shamelessly inciting the students to riot and revolution. The Chamber delegated the most intelligent policeman in the city, Captain Peawit of the "Red" squad, to attend the old gentleman's somewhat quavering lectures, and to take down notes. The Captain could write. At the end of a week he turned in his notes.

The Chamber was amazed. How dared any professor of economics, and one old enough to know better at that, tell these students being educated at State expense, all about the outrageous demands labor was making in their own fair City, and how dared he repeat what the agitators were saying about the "outrageous" way labor was being "exploited" by the manufacturers? Everybody knew there were slums in the city; every large industrial city has slums. But why advertise to the whole country, as this indecent old radical was doing, the dirt and degradation in which about fifty thousand of the City's inhabitants were festering—and *must* fester in the natural course of events in any city of comparable size? It would drive away tourists. The man was actually poisoning these immature young minds with full details of the Russian Revolution, and thereby indirectly urging them to ally themselves with "the proletariat" to seize all industry from its lawful possessors.

Breathing hard through his nose, the President of the

Chamber tossed aside the Captain's notes and pressed a button for his stenographer. "Take this down, and send it by special messenger at once." He dictated an ultimatum to the President of the University: "If Professor P. Q. R. is not immediately dismissed, the Chamber of Commerce will withdraw its support from the University. As you are aware, a majority of the members of the Appropriations Committee of the Legislature are also members of the Chamber of Commerce. Final action on the University Budget for the coming biennium will be taken two weeks from today. Yours, etc."

On receipt of this forthright communication, the President of the University did an amazing thing. He fell out of his swivel chair, crying. He was no longer able to sit upright. An uncontrollable fit of laughter had temporarily paralyzed him from the diaphragm down. "Tell this man to come out here and watch me do the firing," he directed his secretary when she finally got him to his feet. "He is a member of the Board of Regents, and he might as well get some fun for his money. Ask Professor R. if he can drop in for a few minutes in about half an hour. We can't get on without some ammunition."

The "conference" lasted a scant ten minutes. Professor R. admitted everything, even to having seen Captain Peawit sitting in the back of the lecture room puffing away at his notes. "And you kept on lecturing, Professor?" the President of the Chamber enquired, raising his bushy eyebrows. The Professor did not deny it. "These notes a fair report of what you said, Professor?" With the deft skill born of forty-five years of sifting semi-literate rehashes of his lectures, the Professor shucked the sheaf of badly scribbled notes in a few seconds, and handed back the Captain's effort. "Yes," he admitted; "I should rate that

lot somewhere between an 'E' and an 'F'—between 'conditioned' and 'failed?'" "But he has not misrepresented your lectures?" "No. Only he seems to be rather more stupid than the usual run of freshmen." The President of Commerce nodded to the President of Learning. The latter proceeded to his obvious duty. "Professor R.," he began, and was immediately interrupted by the Professor.

Almost in tears, the old reprobate broke down and confessed everything. In extenuation of his crime, he pleaded that he had been lecturing on economics for forty-five mortal years to generation after generation of students, ninety such generations in all, each stupider than its predecessor. He was due for retirement at the close of the current semester. He was now within a few weeks of seventy. Faced with the duty of preparing a new set of lectures for the concluding semester of his service, he had been overcome by acute disgust, ending in physical nausea. An utterly disastrous attempt half an hour after dinner one evening had decided him to abandon all such efforts and to write no more lectures. "I made that resolution in the bathroom," he confessed, "and," he continued somewhat defiantly, "I have kept it. The moment I returned to my study, I knew that I was cured of writing lectures, forever."

"But you admit that you have lectured?" the President of Commerce demanded accusingly.

"In a way yes, and in another way no. The lectures were not mine. I read them all out of a book I got from the university library."

Commerce turned to Learning. "Your library harbors this sort of Red rubbish?"

Learning was diplomatic. "It harbors a lot of rubbish. A great deal of it was given to us by grateful alumni. The librarian puts it on a special shelf, with the name of the

donor inside the front cover of each book. A State law prohibits us from ever burning the stuff or giving it away."

Professor R. now became eagerly helpful. "Yes," he exclaimed, "that's the shelf. I knew I should find what I needed for my last lectures there." He exhibited a stout volume, still handsome, bound in dark blue, not red: *An Economic and Social History of the Industrial Revolution in England, 1760-1830*. The title page informed the prospective reader that the book had been compiled from lectures delivered to the Merchants' and Manufacturers' Association of Birmingham in the winter of 1883.

Commerce briefly compared the Captain's notes with the book. The Professor again became helpful. "I read the students nothing but the 'Analytical Table of Contents' in the first sixty eight pages. It is quite easy to get thirty full lectures into that space with the small print they used in the eighties for summaries. The whole meat of the book is there, and you needn't bother to read any of the rest."

"So I see," Commerce agreed.

"You may retire, Professor R.," Learning nodded to the Professor.

"I shall," the Professor announced, bowing in turn to Learning and Commerce. "At the end of this semester."

"And about time," Commerce snapped ungraciously. "Good day."

3. RESURRECTION OF SAINT THOMAS AQUINAS

On our tour of the museum we may see some specimens which it would be difficult, if not impossible, to match today in any civilized country of either the old world or the new. Some, it is certain, could not have been duplicated anywhere or at any time on the North American Continent. Again, the majority of impartial observers seem to agree that the

average English-speaking worker—if and when he can get work—is better off today than his average ancestor was during the Industrial Revolution. Many believe that the like is true for the present compared to sixty, forty, or twenty years ago—fix the number of years to suit your own judgment, the exact number is unimportant.

Up to this point all fair-minded men seem to agree. As this matter is important for what is to follow, I shall restate it: The average man with a job is better off today than was the average man with a job a number of years ago. It is quite immaterial for the important point I shall try to bring out whether the foregoing statement is true or whether it is false. To avoid repetition, those who believe the statement to be true will be called employers; those who believe it to be false will be called workers. These are merely verbal labels; tweedledees and tweedledums would do as well, and perhaps better, because both classes act precisely alike. If you prefer you can follow Karl Marx and use “bourgeois” and “proletariat.”

The employers say the workers *ought to be* satisfied because they are so much better off than their fathers were. This “ought to be” is the essence of the distinction between “economic science,” or “the science of economics,” and “science” as professional men of science—followers of Galileo—understand science. The “ought to be” removes economics from the domain of science to that of metaphysics. There is nothing in the domain of science that “ought to be” anything else than what it is. The “what it is” is determined by observation; it is the fact. Science accepts facts for what they are; metaphysics seeks to dissipate them in a vapor of logic, frequently borrowing coals of fire from moral philosophy to generate the necessary heat.

The workers care nothing whatever for what “ought to

be" their attitude to their condition; they demand more than they have, and they refuse to be budged by either logic or moral philosophy, or by both. That is the observed fact. Confronted with this fact, science would attempt to proceed in the direction indicated by this fact and others that might be discovered on the way; economics shouts itself hoarse arguing.

The like is true for the other side, which also has its holy bible of economics. Everyone will admit that a given amount of labor—measured in man-hours, say—produces a great deal more wealth today than it did a number of years ago. And nearly everyone knows that many years ago the worker owned the tools necessary to produce his output of wealth. From this and similar facts the workers pass to their conclusion: the workers "ought to" own the present means of production. Like the other "ought to," this one also is metaphysics. The fact is that the workers do not own the means of production. Moreover, the consequences of such ownership, should it ever come about, are wholly unpredictable.

The "ought to" in this case is further aggravated by a severe eruption of apparently incurable mysticism. It is believed that because conditions have been bad for the workers under private ownership of the means of production, they will be good under public ownership of the means of production. This, as has been stated, is a belief. As such, it is of no scientific value. It may be good economics, but it is not science at all, and is not to be attacked or defended by any method of science.

Again, it is believed that those who have not yet given any evidence of a capacity for directing large-scale production, will automatically develop that capacity when the means are seized by their hands.

They tried it in Italy before gladly resigning the charge to Signor Mussolini, who appears to believe himself capable of running not only Europe and all its factories but the entire universe. And last, it is believed that society will be happier as a whole under the united direction of all the workers—assumed as a mass to have the sum total of all the virtues which many of them as individuals are admitted to lack—than under any other direction. This is the old fallacy of assuming that others less fortunate than ourselves have merits which we ourselves lack and probably would not know how to employ for our own benefit if we had them. Concomitantly, of course, it is believed by the workers that all employers individually are as inimical to the happiness of society as their whole class is believed to be.

What has just been said for the workers holds also for the employers. Both persist in mixing “ought to be” and “will be” with “as it is” and “as it may become”—the last used by the cautious only in extreme emergencies. Moral indignation and wishful thinking combine thus to form the highly explosive mixture called “economic science.” It is as far removed from science as mediaeval theology ever was. This is true of all brands, from the capitalistic and fascist to the socialistic and communistic.

So far, no mischief need result. If you prefer to call steel butter, and butter steel, nobody can stop you. But when you begin spreading steel on your bread and manufacturing sixteen-inch guns out of butter, you are sent to the lunatic asylum. Still so far no mischief is done, because you are locked up where you cannot convert society to your peculiar misuse of words. But when you begin calling metaphysics science, and proceed thence, logically enough, to claim for your metaphysical abstractions a scientific validity in the world of fact which they do not have, you are likely to

mislead a great many unsuspecting people into believing that your "laws of economics" are "laws" of nature. Your dupes are favorably "conditioned" by seeing automobiles, radios, surgical instruments, machine guns, and countless other visible testimonials to the Galilean method displayed in every shop window. Thus conditioned, they believe without seeing anything but social disorder and confusion all about them, that economic laws of nature decree this intolerable mess. "Is not economics a science?" they demand. "And is it not futile for human beings to deny facts established by science?" Of course it is futile; it is even imbecilic. "Therefore," the dupes conclude, "human society is a mess, always has been and always will be a mess, world without end, amen." In the meantime economic theology obstructs cold-blooded, impartial observation and cautious, controllable experiment to determine what may be the facts, if any.

"Why can't labor be reasonable?" shouts Capital, and Labor shouts back, "Why can't Capital be reasonable?" "Why can't you use a little logic?" both roar together, and stop abruptly, red in the face.

Schemhamphoras of Schemhamphorasses! They *are* reasonable, both of them, as immovably reasonable as any pair of logic-bemused doctors of divinity of the Middle Ages ever were, or as Adam Smith, ex-professor of logic and of moral philosophy in the University of Glasgow, ever was, and that is largely what is the matter with them.

Both are back in the Thirteenth Century, debating by the purest of pure reason and the tightest of logic, with Saint Thomas Aquinas sitting as their reasonable and logical umpire. The Saint turns to the Umpire of umpires with a beatific smile: "They are evenly matched, Your Supreme Highness. I can detect no flaw in the logic of

either, and each is the most reasonable of men. At last my Immaculate Reason is justified of her children, and that misbegotten child of Unreason, the infidel Galileo, is refuted and silenced. Allow me to recommend to Your Omnipotence that each be awarded a harp of gold with seven silver strings, a golden crown with seven diamond stars, and an infinite barrel of seven-star nectar, that he may be inspired to sing sweet hymns of reason for ever and ever. Capital and Labor, these twain, Your Omniscience, are my only beloved sons, in whom I am well pleased."

4. FATHER ADAM'S DEVIL

While our Founding Fathers were affixing their signatures to the Declaration of Independence, they might have heard two surging chants rolling up from the pit of time, had not their ears been ringing at the moment with popular ballads of liberty. The first was the marching song of an army whose fathers were yet to be born into this world: "We are coming, Father Abraham, a hundred thousand strong"—to bring liberty and independence to black men as well as to white at Lincoln's call. The second chant was that of an army already on the march, the Grand Army of Industry: "We are coming, Father Adam, five hundred million strong"—to bring slavery and dependence to themselves, their children, and their children's children, black, white, or pie-bald, without distinction of race, creed, or previous condition of servitude.

When the Constitution was signed, slavery was still as sacred an institution as it was in Saint Augustine's City. One of the major wars of history and an amendment to our Constitution were required to correct a slight oversight of the Founding Fathers. They appear to have overlooked the fact, as implied in the Preamble to the Declaration of

Independence, that not all men with the inalienable right to life, liberty, and the pursuit of happiness are white on the outside. Hence it was necessary for the Hundred Thousand to write a footnote to the Constitution in their own blood remedying the oversight.

No similar oversight on the part of the Founding Fathers was responsible for the march of the Five Hundred Million. That Grand Army was already sweeping forward to destruction when the Fathers dipped their pens in the ink, and not all the geese in the world could have supplied quills enough—even if the supply of paper and ink had been inexhaustible—to halt the march. The Grand Army had not fallen into line at the command of any king or of any president and it was not to be hastened or checked in its disorderly march by any constitution, written or unwritten, promulgated by any parliament or by any congress. Mechanical invention and scientific investigation are indifferent to legal formulas. The Grand Army of Industry took its marching orders from mechanical invention at first, and later, when the march was already headed for the precipice, from scientific investigation. Neither mechanical invention nor scientific investigation is actuated by any such love of the *fatherland as* may be responsible for political constitutions. From a legal or moral point of view, each is as lawless as an anarchist turned highwayman.

Countless wars have been fought to hasten the march at one time, to retard it at another, and many flank attacks have been launched in attempts to change the direction of the march. None has had any appreciable effect. Orders shouted at the marchers by excited bodies of legislators have apparently not been heard. The march continues undeviatingly toward the precipice, and the marchers continue to live their own laws and to amend them daily in sweat, wealth, and blood.

The Hundred Thousand answered Lincoln's call. The Five Hundred Million are sometimes said to have responded to the summons of Adam—not the common father of us all, but Adam Smith, one time professor of logic and of moral philosophy. But this claim in behalf of the Adam of economic theory is excessive. It may be true that the Grand Army chanted, "We are coming, Father Adam," but if so the response was ironical. Adam's magic did not raise that army from the abyss, although many a mystic still believes that it did. It was as if some bungling amateur of a necromancer had raised the Devil when he thought he was concocting gold or the philosopher's stone—Father Adam suffered from the delusion that he was doing both in his more esoteric researches into trade and industry. What would the disconcerted bungler say to the Devil's greeting: "Well, here I am. Now what in Hell do you want of me?"

What did Adam say? Nothing. He just sat in his chair of moral philosophy—at the time in his most respectable mother's Georgian drawing room—and stared at the apparition with his mouth open. He had expected nothing at all like this.

To his credit, he was appalled. But the shock weakened his heart, or his head, or both, and he died before he could reverse his incantations and send the Devil back where he belonged. Today that most rugged of all individualists goes roaring up and down the world seeking what lamb he may next devour. For Adam Smith in the late Eighteenth Century all but loosed that famous slogan, "Rugged Individualism," of the early Twentieth Century, which was to prove the most disastrous boomerang ever hurled by a right-handed statesman at his left-handed enemies. If Father Adam did not himself coin the unfortunate phrase, the gold for it was brewed in the stinkpots of his moral alchemy. Adam is the father of anarchic competition and

the author of "laissez faire," which is rendered in English, "Do as you damn please and to Hell with the consequences for anyone but yourself." We shall return to this perfectly logical gospel later.

For the moment we note that *laissez faire* is an inescapable deduction from the romantic "Freedom" and "Equality" of that sentimental lover of idealized savagery, Jean Jacques Rousseau. Father Adam took one pot-shot at the democratic lifebelt and sent it to the bottom of time like a ton of bricks. His ammunition was Jean Jacques' own "freedom." That shot is surely high up among all the ironies of human stupidity.

Father Adam was at once one of the most fortunate of men in his creation of a new religion, and one of the most unfortunate. He was fortunate in that he attracted a vast host of converts to laud and magnify his name. He was unfortunate in that a generous impulse of his dour Scotch own made his bible as antiquated as a Babylonian hymnbook before it ever appeared in print. The theology of the *Wealth of Nations* was deader than a dead dinosaur before the book went to press, and Father Adam himself was the unconsciously altruistic author of its extinction—another of those historical ironies that seem sooner or later to overtake all purely deductive systems manufactured to account for a few over-simplified observations of an infinite complexity of facts.

We may appreciate the true comedy of Adam as it deserves to be appreciated if we imagine another that might have happened to an older spinner of dreams, but did not. Suppose the author of the Book of Genesis had concluded his labors, not some thousands of years ago, but in the Nineteenth Century a decade or two before Darwin published his treatises, *The Origin of Species by Natural Selection* (1859), and *The Descent of Man* (1871). No doubt the

ingenious creator of Adam and Eve would have enjoyed an immense popularity in his own day, and even now millions of nice people would believe in the pleasant tale as the historical record of actual events. For Adam (not Adam Smith) and Eve were a very nice young couple, and their Garden—in spite of the snakes that skipped along so queerly on the tips of their tails—was a very nice place; and it is very nice to believe in those innocent honeymooners strolling through the garden in the dusk of the evening. So in due course all the nice people would band together into a Society of Friends of Adam and Eve for the Pursuit of the Good Life—perhaps also of the elusive dollar as a side-line.

When well organized, they would hold morning and evening garden parties once a week, open to all who cared to drop in for a cup of tea or other refreshment, with a stroll through the garden in the evening as the fitting close to a perfect day. They would enjoy these weekly parties so much that presently they would be kindled by a holy generosity to share them with all their partyless brothers and sisters from Greenland's icy mountains to India's coral strand.

To explain what it was all about to the Greenlanders, the Indians, and other ignorants, the Society would print the story of Adam and his unwedded girl wife in all the civilized and uncivilized languages of humanity. Then they would set out on their travels to spread the good story—for it was a very good story indeed, one to take in almost any trusting savage. They would "take up the white man's burden." That is, they would relieve the brown, black, and yellow men of whatever they happened to be carrying at the moment, and walk away with it themselves, leaving in exchange a neatly bound copy of *The Good Story*, a bottle of cold tea or other refreshment, and two glass beads apiece to cover the more obvious nakednesses.

A little later, one or two might return—after having de-

posited their heavy burdens in a safe place—to get the now unburdened “natives” on the move again. They would give each native half a pound of calomel, a double handful of rhubarb pills, a tin shovel with a broken handle, and forthwith teach him the construction and use of a latrine. Then he would be in shape to take up another burden to be kindly relieved of.

But most of this time, rude little boys who played in gutters rather than in gardens, would be climbing the garden wall and yelling remarks to the strollers in the twilight: “Aw, come on out of it! You ain’t Adam and Eve; you’re nuts! There ain’t no Adam and Eve anyhow. Old man Darwin up at the zoo says there ain’t, and he sure knows. He says you’re just a lot of monkeys like the ones he’s got in a big cage at the zoo. And you sure do act like it. Go climb a tree, Eve! After her, Adam! Attaboy! ‘Oh, a monkey married a baboon’s sister; first he smacked her, then he kissed her, and she began to cry. Oh, a monkey—’”

But at this outrage a well-aimed copy of *The Good Story*, hurled with unerring aim by the stoutish Bishop of Oxford who had accompanied a wealthy lady convert to the garden party, dislodges the songster, and he falls plump into the arms of the policeman, who all this time has been waiting to do his duty. Sounds as if of loud applause by strong hands, accompanied by howls of defiance, conclude the evening service.

Now, poor Father Adam was in precisely the same fix as our hypothetically retarded author of *Gensis*. He was just a little too soon. But, as Browning exclaimed,

“Oh, the little more, and how much it is!
And the little less, and what worlds away!”

And precisely as our imaginary author was followed by a well-organized, vigorous, proselytizing, prosecuting, persecuting,

and plundering religion, so also was Adam Smith followed. His doctrines of economic theory became sacred dogmas, subjecting believers and unbelievers alike to the tyranny of an Established Economic Church.

It is true that Smith's doctrines were linked to "laws" of the Christian God by those who found it to their own interest to impose their dogmas on society. Hypotheses first became "laws of nature," then, by Nineteenth Century logic and belief, Laws of Divine Providence. Attempted disobedience to these supernatural decrees was impious. From Laws of God to laws of man has always been but a step, and in this instance that step was taken early. And, as usual, the sinful mass of mankind, sweating its heart out to make both ends meet, got the dirty end of the transaction between greed and superstition on one side and the mass of humanity on the other. The superstition in this case was economic, but it was none the less superstition, founded on irreproachable deductions from a meagre handful of imperfectly apprehended facts.

James Watt (1736-1819) was Adam Smith's Darwin—or his Devil. Watt did a tremendous lot to precipitate the real industrial revolution. Those who like to date great epochs may safely date the beginning of the machine age from Watt. Seven years before the Declaration of Independence and the publication of *The Wealth of Nations*, Arkwright patented his water frame, and Watt his steam engine. Shortly after Father Adam completed his bible of classical economics, two other great inventions, Cartwright's power-loom and Crompton's cotton-mill made nonsense of much of Adam's abstract theology and discounted the rest.

Those epochal inventions gave the final impulse to the retreat from the last vestiges of feudalism which had already been in progress for several decades. The "home industries"

of weaving and spinning, carried on by more or less happy and prosperous families in their own, clean, comfortable cottages, disappeared for ever, and a great river of humanity streamed toward the unsanitary, ramshackle factories, to enslave itself to machines and to breed furiously in filthy slums like maggots in a dead ox. On a grand scale that even Dante would have thought fantastic, the wholesale damnation of the human race began. Adam Smith had foreseen none of this, nor did his sublimely ridiculous economic revelations provide for any of it. As a prophet he had been as wise as an owl and blinder than a bat. Yet, by the time the great corruption began, Father Adam's water-tight, steam-proof logic had become a sacred dogma for which men fought and other men died like rats in a trap at their water wheels and steam engines.

It was Watt who was largely responsible for the cardinal dogmas of Adamite economics. A passionately sentimental lover of "Liberty" after Jean Jacques' own heart, Adam Smith had argued and reasoned against all restrictions on the freedom of industry and trade. Such restrictions were only too numerous in the society of his youth. These restrictions were the slowly decaying remnants of the great lifebelt Saint Augustine had thrown the human race. Merchants and industrialists still writhed to free themselves from hampering laws and regulations imposed in the first instance by the Church, then by the Rulers, and finally by the Government to facilitate the spoliation of their class. No doubt the restrictions were liberty itself compared to what the merchant class had endured for their sin of "cupidity"—plunderability—in the Middle Ages, but they were still aggravating enough to provoke a constant outpouring of counter-legislation and shocking profanity.

The industrialists kicked against all "regimentation"—

as we might call it today—and Adam Smith kicked with them. Would-be independent business men kicked against the grasping, mean-spirited industrialists, who sought to hog the whole sty for themselves and to wallow in the trough they could not empty by their own efforts, rather than let any half-starved razor-back get a single snootful of the luscious profits. Adam Smith kicked with the presumptuous independents, too. In fact he lit out with both feet at anybody and everybody who appeared to him to be treading on fair Liberty's rosy toes. And in particular he kicked when he saw the shabby treatment accorded James Watt by the dictators of trade and industry.

Smith at the time was professor of Political Economy, then, as now, an infant "science," at the University of Glasgow. Watt had craved permission of the Corporation of Hammerston to start business as a maker of mathematical instruments. The Corporation refused, because Watt was not a "burgess" of the town and had not served an apprenticeship. Apprentices, by the way, contributed handsomely to their masters' support. This ancient "racket" is still practised in the British Colonies, where young simpletons actually pay good hard cash and lots of it for the privilege of doing manual labor, on the theory that they are learning the mysteries of tea-planting or wheat-farming. "Corporations," it may also be remarked in passing, corresponded roughly to our more meddlesome Chambers of Commerce.

With the assistance of a Professor at the University of Glasgow, Watt circumvented the Corporation. The Professor, a friend of Watt, let the inventor set up his workshop in the university buildings. The rapacious Corporation could not get at him there; and there he revolutionized trade, industry, and corporations. If ever a university

gave aid and comfort to a "radical," the University of Glasgow did when it invited James Watt to upset the social and economic system of centuries. The difference between the civilization Watt helped to transform and our own, only about a century and a half from his, is very much greater than the difference between his civilization and that of the Middle Ages.

Although I have an intense dislike for morals, I cannot refrain from indulging in a very mild one now as a sort of tail-piece to this little history of Father Adam's Devil. The Corporation would have thrown Watt into jail or at least out of town if it could have got its itching hands on him. The University snapped its fingers in the Corporation's face because its charter guaranteed it freedom from unintelligent meddling in its proper affairs, namely, the imparting of knowledge and the unbiassed pursuit of the same to the best of its ability. The very Corporations that would have denied Watt the opportunity to get on with the work for which he was born were the largest beneficiaries of that work. Watt showed them how to make more money than the most avaricious miser had ever dreamed of. And they made it. I am not implying that the making of money is the chief end of life or of research; I am merely recalling some history that may appeal to hard-headed business men.

The moral need hardly be stated. Instead of bullying doddering old professors of prehistoric economic theories, as we saw being done earlier in this chapter, (a true story, by the way, though somewhat disguised, for obvious reasons), it might pay some forward-looking Chamber of Commerce to make it possible for some man with scientific brains in his head to find out what the facts of economics are. It seems obvious that we shall not get anywhere by shouting more or less meaningless epithets, like "radical," "communist," "capitalist," "exploiter," at one another.

Some feeble attempts to get at the facts are being made, it is true, and some of them are actually protected in complete freedom of enquiry by prominent "capitalists"—if I may bandy the epithet; you see how hard it is to get on without tags of some sort. However, I am only one of many outsiders who are not absolute fools—or who think we are not—who believe that no thoroughgoing attack on economic problems by men using modern weapons has yet been attempted, much less launched. And by "modern" I mean more recent than the Eighteenth Century, or even the Sixteenth.

Invention, and after it, science deliberately applied to invention and industry, offered our stupid race what once looked like a promising lifebelt. We may yet have time to discover whether the belt can float before we all go down with the ship.

5. THE FOURSQUARE GOSPEL OF ECONOMICS

The classical economics which rationalized the Industrial Revolution was largely the work of four great logicians: Adam Smith (1723-1790), David Ricardo (1772-1823), Thomas Robert Malthus (1766-1834), and John Stuart Mill (1806-1873). To these four might be added Jeremy Bentham (1748-1832). With the exception of the Scotch Adam, all were English. All five had minds which were, strictly, scholastic. They are in the great mediaeval tradition of Saint Augustine and Saint Thomas Aquinas. Not one of them gives any evidence in his thinking of ever having heard of Galileo.

Perhaps Malthus comes the closest to a scientific approach, but he was by training a mathematician, by profession a clergyman till he became a professor of political economy, and by temperament a theologian. In defense

of mathematics, if any defense is needed, it may be said that Malthus made a fine record at Cambridge, where the mathematics then taught was prehistoric even for its own times. He seems to have been permanently bemused by the elementary numerical magic of arithmetical and geometrical progressions, which is about as far as he got. His most useful contribution to the progress of knowledge was the unintentional inspiration his *Essay on the Principles of Population* (1798) gave Charles Darwin for his theory of "natural selection." "I saw," says Darwin, "on reading Malthus . . . that natural selection was the inevitable result of the rapid increase of all organic beings." But logicians cannot see through brick walls any farther than the rest of us, and whatever practical validity Malthus' mathematical reasoning may have had in 1798, has been largely nullified by the progress of invention, industry, and science which he did not foresee.

The importance of Malthus for the Industrial Revolution was the magnificent show of reason his theories provided for economic apologists. Population, according to Malthus, must increase faster than the food supply necessary to support it, unless our human ruttishness is counterbalanced either by birth-control or the "natural" checks of unsanitary working conditions, sweatshops, the direst poverty, large industrial slums, restriction of medical attention to the poor, disease, epidemics, plague, war, and famine. Never in the history of logic had a more impressive array of sound reasons for oppressing labor to its own advantage been spread before human cupidity.

Among the most enthusiastic converts to the new logic were the clergy. Accepting wholeheartedly all but one of Malthus' proposed checks on population, they agreed that squalid poverty is the Divine Will, and quoted Scripture to

support political economy: "The poor ye have always with you." Curates and "district visitors" impressed upon their parishioners the virtues of humility and meekness under the chastening rod of Providence, and assured the emptiest that they would soon be filled with good things—in Heaven. Obsessed then, as now, by their inveterate preoccupation with sex to the exclusion of all else in any way even remotely connected with material decency, the clergy threatened with hell-fire any wretched woman who rebelled at bringing a tenth unwanted child into the world to starve.

It was during this golden age of logic and piety that the classic "needle's eye" formula for achieving salvation was devised. Overlooking the obvious fact that the mercy of God is so vast that it can envelop even a multibillionaire, the clerical economists sought to make things easier for their wealthy clients by doing some unnecessary philological research in Hebrew. In Holy Writ it is explicitly stated that it is easier for a camel to pass through the eye of a needle than for a rich man to enter the Kingdom of Heaven. The clerical economists discovered that "the needle's eye" was really the name of a certain gate in the holy city of Jerusalem, through which a lean camel could just squeeze if it were not too heavily burdened. Therefore, if the wealthy Mr. Heavysides would shed fifty thousand pounds of his superfluous wealth to restore the chancel or build a Victorian-Elizabethan residence for the good bishop, he could just squeeze through. Mr. Heavysides promptly shed a wad of the necessary thickness, and thereafter walked the earth a free man, looking every damned camel he met squarely in the eye and telling it to go to Hell.

Of the other great prophets of economic logic, Ricardo was a Jew who made a fortune in business. He was also a spiritual son of Father Adam, although he did not always

give his intellectual procreator due credit for his rich heritage of theories. Unable to square his Judaic prejudices with his business practices, Ricardo got himself converted to Christianity. Thereafter he lived at peace with himself, his fellow men, and the Industrial Revolution. The most devastating logic of Ricardo's theories is but Adamite economics transposed to the higher key appropriate to his own singing good times; so we need say no more about him.

Father Adam was the economist of *laissez faire*, Jeremy Bentham its politician and legislator. This queer specimen of humanity was by training a lawyer and by self-imposed profession a keenly analytical critic of the law. Jeremy's was the great good fortune to give the greed of the powerful as substantial a foundation as pure logic and purer metaphysics can give anything. That famous slogan, "the greatest happiness of the greatest number" was Jeremy's war-whoop to the vultures, summoning them to descend and feast. The phrase is said to have been coined by Joseph Priestly (1733-1804), chemist and theologian; but whoever coined it, Bentham was its most lavish spender for the greatest greed of the smallest number. Not that Jeremy himself was grasping; far from it. His error was the classical one of creating a perfectly sound abstract social philosophy that could be applied by men more practical than himself to their own advantage and the disadvantage of everyone else.

One act of Jeremy's should endear him to all who believe that economists should be stuffed and preserved in museums for the wonder and admiration of future generations. As his last gesture to society, Jeremy willed that his corpse be dissected, his skeleton dressed in his usual clothes, and the astounding result of all this be put on exhibition. You may see him today in the University of London.

John Stuart Mill was a very distinguished reasoner indeed. Ricardo was his ideal father, and therefore Adam was his ideological grandfather. John did not always take kindly to his spiritual papa's tough Adamisms, and did his logical best to soften them a little—a very little, however. But this natural complex of his intellectual infancy quickly corrected itself, and honest John was forced to admit that after all father knew what was best.

Before passing on to a brief exegesis of Father Adam's four-square gospel, which implies all the logic of his great sons and grandsons, it will be instructive to glance at Mill's atrocious childhood and more atrocious education. Mill was educated by his carnal father, who seems to have been more nearly the perfection of stupidity than any professional pedagogue known to educational history. In his autobiography, Mill states quite dispassionately that he "never was a boy", so we can skip his boyhood. As soon as he could speak, he was stuffed by his incredible parent with Latin, Greek, mathematics, and the English classics. Greek he began at three. Logic and political economy he took up before he was fourteen. History, law, and philosophy followed. What Mill did not know about putting words together to form closely reasoned arguments by the time he was seventeen, when his erudite papa abandoned the attempt to petrify him further, was simply not to be known. He had received and thoroughly digested the ideal education for a mediaeval theologian, a metaphysician, or a classical economist. Some have called him a snob.

All this education is reflected in the brilliance of his social logic, still very highly thought of—by classical economists. A single example of his thundering theorems will show how far he had penetrated hostile territory when he composed his *System of Logic*. "The deductive science of society will

not lay down a theorem asserting in a universal manner the effect of any cause, but will rather teach us how to frame the proper theorem for the circumstances of any given case. It will not give the laws of society in general, but the means of determining the phenomena of any given society from the particular elements or data of that society."

Almost with tears in their eyes, the sons of Adam beg us to believe that this ringing manifesto is Economics' declaration of independence from the slavery of deductive reasoning. They insist that it is a statement of so much of the scientific method as is applicable to economics and sociology. They may be right; but the manifesto as it stands is nothing more than the stirring appeal of a grievously miseducated man for the retention of pure mediaeval verbalism in its most sterile form.

Coming now to the teachings of Adam himself, we recall his fundamental muddle over "Liberty," which he loved, and its twin sister, "Freedom," which he enshrined as the goddess of economic theory. His confusion was identical with Rousseau's: an irreducible contradiction between fact and fancy. Like Rousseau, Adam Smith resolved the contradiction by the light of reasons that never were on land or sea. The great wealth of concrete examples adduced by him from the social and economic phenomena of his time, in support of his extrapolated contentions, added greatly to the weight of his *Wealth of Nations*. They convinced "practical men," who might have had some difficulty in seeing that one and one make two, but who saw instantly that one fool and one fool make two fools or even, under the proper economic stimulus, a baker's dozen.

Smith is the father of pure "individualism." He took it as axiomatic that self-interest—plain unadulterated selfishness—is the invisible cement which holds society together.

to the poor for bread." That was not so bad; the poor ate the somewhat indigestible stuff, and business grew fatter and fatter. What really mattered was that the poor seemed to enjoy the strange mixture. They became so feeble that they could no longer do an honest twelve, fourteen, or sixteen hours' work a day even in their lusty prime at the age of twelve. They were scolded as properly as they should have been for their slothfulness.

It was seen, but not admitted by true believers, that there was a factual antagonism between the self-interests of the manufacturers and those of their customers. But by this time Adamite economics had become sacred dogma: Fact bowed to belief. Frequently it was to the selfish interest of some manufacturer to make as much money as he could in the shortest time possible, and to get out of business after having run down his factories to the most dangerous and unsanitary condition compatible with operating at all. That was the fact. Should some "agitator" point out that the manufacturer's increasingly adulterated product was injuring his customers, the accused would shrug his beefy shoulders and retort, "I am not in business for my health." And in five or six years he would retire to the Riviera to conserve his excellent health for the rest of his long days, while his employees retired to the poorhouse and his former customers to the graveyard.

When observers of facts attempted to remedy the wholesale poisoning of a nation by "agitating" for legislation against the adulteration of drugs, they ran into that stout old stone wall of the law: *caveat emptor*—let the buyer beware. It was up to the purchaser, not the seller, to see that he did not poison himself with Heileger's Beef and Iron Tonic for the Blood, or throw his infant daughter into convulsions with Mother Hubbard's Doping Syrup.

As I hear the policeman walking by, I hasten to assure him that the agitators to whom I refer were British, and that the good manufacturers finally agreed with them. Further, there is no cause for alarm on the ground that very recently dead American controversies are being exhumed; all this happened in England about eight decades before Doctor Wiley started his campaign for a Pure Food and Drugs Act in our own United States, and therefore about eleven before the recent death and burial.

Another of Adam's most beautiful deductions was immediately contradicted by brutal facts almost as soon as the engineers got steam up in Watt's boilers. The highly intelligent laborer, striving to advance the good of society by selfishly seeking his own material prosperity, would naturally gravitate to those places where it was most advantageous for all to have factories built. Hence factories would spring up in economically ideal surroundings and a happy band of prosperous workers would sing all day long at their selfish job of bettering society. Actually, the factories proved relatively immobile, and the workers festered all about them in slums that clean beasts fled from. Only human beings and vermin remained to witness the triumph of economic theology—"Man's self-interest is God's Providence."

The premature fossilization of economic theory hardened not only men's hearts but their heads as well, and sluggish currents of cold logic pulsed feebly through the calcified blood vessels of their brains. Their eyesight dimmed, then faded. The nature they had never seen became an incredible myth, and they reasoned the supposed eternal "laws" of the physical universe into the carcasses of their sainted theories.

With the ruins of the classical economics all about him,

Ricardo intoned like a sclerotic Aquinas the “the laws of economics are as rigid as the law of gravitation,” and this when prediction after prediction from those supposedly immutable laws had been contradicted by fact in his own lifetime.

The good Malthus, as beffited a clergyman, incorporated sacred economics bodily into Christian theology: “By this wise provision [of the Creator], namely of making the passion of self-love beyond comparison stronger than the passion of benevolence, the more ignorant are led to pursue the general happiness, an end which they would have totally failed to attain if the moving principle of their conduct had been benevolence. Benevolence, indeed, as the great and constant source of action, would require the most perfect knowledge of causes and effects, and therefore can only be the attribute of the Deity. In a being so short-sighted as man it would lead to the grossest errors, and soon transform the fair and cultivated soil of human society into a dreary scene of want and confusion.”

This sublime passage—the lyric imbecility of it—must have been composed to prove Rousseau’s contention that “a reasoning man is a depraved animal.” Could not the pious justifier of the economics of a generous God to starving man see with his own eyes that “the more ignorant” had *not* furthered “the general happiness,” and that “the fair and cultivated soil of human society” was a howling wilderness? Or possibly “the general happiness” included only those who could pay pew-rent; sweated labor could contribute to the happiness of everyone but itself.

If it be pleaded in extenuation of Malthus’ superlative stupidity that the Industrial Revolution had still to run the filthier part of its course when he died, how acquit of a greater stupidity the economists who reprinted and preached

the same dogma all through the Nineteenth Century? Were they, too, dead? Or merely rotten from the Adam's apple up?

One more masterpiece of the pre-diluvian "science" and we shall leave the Adamites to rest in peace—if they would but rest and not parade through our legislatures and congresses in their shrouds. "Freedom" of the Jean Jacquesian brand was to have abolished iniquitous Monopoly. Did it?

According to Adam, self-interest of the manufacturer would compel him to protect his employees, to see that they got decent living conditions, and so on, all through the workman's hypothetical bill of selfish rights. Did it? According to Adam, the self-interest of the workman would compel him to protect the interests of his employer? Did it? According to Adam, "Equality," also of the Jacquesian brand, was to have made employer and employee "equal." Did it?

Monopolies being abolished, it was lawful for the employers to combine for their own selfish interests in order that society should attain the greatest happiness as a whole —by the fundamental axiom of Adamite economics. But as the employees had nothing to sell but their labor, which was not, technically, a "commodity," it was unlawful for them to combine into unions for their self-interest. Moreover, to legislate between employer and employee would be to restrict the freedom of both, and therefore to hamper sacred *laissez faire*.

These are not imaginary or trumped up instances of the theory and practice of classical economics; they and their like happened, repeatedly. Thus originated the "class war" —call it by any other name, it would smell as rank, and calling it names cannot remove it from the realm of redolent facts.

By 1830, when the Industrial Revolution was approaching its first major peak, heated parliamentarians were calling the industrialists "cruel and inhuman infant killers," and those who could afford to buy tickets were reserving passage for France to escape a flesh-and-blood revolution that was averted by a hairsbreadth.

When the Industrial Revolution reached its second major peak only a few years back, the engineer on a private yacht in the harbor kept steam up twenty-four hours a day, while the studious captain pored over charts of the South Seas. A casual visitor aboard might have observed the stewards furtively poking new lifebelts into out-of-the-way corners, while members of the crew hastily painted out the name on the old lifesavers still hanging conspicuously in their usual places. But the black letters could still be made out beneath the fresh white paint. A letter at a time, the casual visitor spelled out the name: L-A-I-S-S-E-Z F-A-I-R-E. Father Adam's lifebelt, that had saved the passengers on many a previous voyage to "the realms of gold," was suspect—for the moment.

The anticipated storm failed to blow up, the yacht stayed in port, and a week later the crew did another painting job, with black paint instead of white.

Ashore, a ragged individual, who had stolen one of the lifesavers hoping to pawn it for a bowl of soup with real beans in it, stood doubtfully hefting his loot. A puzzled frown betrayed his perplexity. "Well, I'm damned," he muttered. Striding to the end of the wharf, he heaved the lifesaver into the water. His suspicions were confirmed. With a loud splash the thing sank like an anchor ring.

That simple experiment cost the hungry researcher his bowl of soup and his faith in a great many of his most cherished beliefs.

We pass on now to inspect a few of the choicer exhibits salvaged decades ago from the first serious attempt of our race to use the gifts thrust into its hands by science. The gifts were bestowed too suddenly. Naturally they were ruined. To crowd power-looms, steam engines, railroads, electric telegraphs, and the rest on a society just getting over a prolonged bout of feudalism, and to do it in less than a century, proved as disastrous as presenting a half-witted boy of five with an automatic pistol. With its head crammed full of Adamite economics, smug piety, and legalistic logic, society did what might have been expected with the gifts of science. Potential blessings exploded in its hands and nearly blew its silly head off.

The explosion is still in progress, banging and spluttering away like a Fourteenth of July celebration in honor of Jean Jacques Rousseau's anarchic liberty. And unless society balances the scientific toys in its bungling hands with some scientific brains in its head, many believe it stands a fair chance at the present moment of losing what head it has. However, this prospect need not spoil our appreciation of the exhibits of a stupidity older than our own, so we pass on.

Chapter VIII

DID IT?

Ring out the old, ring in the new,
Ring out the false, ring in the true.—TENNYSON.

I. THE SINGULAR CONVERSION

THE late Lincoln Steffens was a “liberal” and a most remarkable man, almost a freak of nature. For he was one of those all but unique students of human affairs who can change their minds when faced with disagreeable facts after a lifetime of believing and hoping. How many of us can do that?

If, for example, we have believed that the increasingly accelerated progress of science and invention will create new industries to absorb the jobless thrown out of work by science and invention, how many of us can face the arithmetic of the facts? It simply is not true that new industries developed to supply the new “wants”—radio and the rest—suggested by science and invention, *have taken* up the slack of unemployment. “Ah,” says the man of science, “but they *will*.” When, in the name of metaphysics? Why not leap at once into the quagmire of morals and say that the scientifically created new industries *ought to* take up the slack?

No, we cannot say that, because there is always a mysterious “period of transition” from the old to the new, while all the men who made their livings grooming horses and

heaving manure out of livery stable windows, say, cross the street to take up their new jobs polishing cars and heaving gas into flivvers. The street these men crossed must have been the one Ponce de Leon missed when he turned up in Florida thinking he had arrived at the Fountain of Perpetual Youth. For, strangely enough, all those men who crossed the street and walked into their flyless garages and filling stations were twenty to thirty years younger than they were when they walked out of their flyful stables.

Can this possibly be the scientific explanation of the "lost generation?" By Beelzebub, it is! Instead of losing a whole generation, we have actually gained at least two thirds of a generation. Our mistake came from a silly slip in signs—putting a minus for a plus. By walking across the street with their backs to the future and their faces to the past, the older hostlers became rosy-cheeked boys again and the younger became the embryos of the new generation that wipes our windshields for us.

A good many excellent citizens who can never change their minds about anything, did not care particularly for some of the changes the versatile Steffens made in his extremely changeful life. There must have been something fairly impartial about him, for he was cordially disliked at various stages of his career by republicans, democrats, money-lenders, money-spenders, laborers, loafers, capitalists, fascists, socialists, and communists. The story of his conversion will probably add a certain number of scientists to this already impressive list. For if some innocent believes that a scientist can change his mind about any of his beliefs based on hearsay and prejudice, rather than on scientific investigation, any easier than the rest of us can, he should do the scientific thing and observe a nest of scientists for a few years. Five would suffice in the United States, for obvious reasons.

In his travels as a correspondent, Steffens visited Italy and interviewed Mussolini. Or rather, Mussolini interviewed him. Steffens records that subversive interview in his *Autobiography*. Having amply demonstrated his contempt for all "liberals" with their mediaeval logic, their blindness to plain facts, and their wishful futilities in trying to think human society into an ideal dream, Mussolini asked Steffens four short questions. Had Steffens seen the war? The peace? The Russian revolution? These three questions Il Duce Mussolini answered for correspondent Steffens, each with a "yes." The fourth question concluded the examination: "Did you learn anything?" At that question, the liberal humanitarian's dream-world, elaborately fabricated from a lifetime of ignoring the fact in favor of the wished-for fancy, vanished with all its "cloud-capped towers" into the cold, clear air of reality.

Steffens left the overpowering Presence a changed man. It was a spectacular conversion. He realized there and then—too late, perhaps, to do much good—that he had been sticking all his life to his "liberal" principles and theories, although each and every one of them was daily contradicted by illogical and unreasonable facts all about him. This was a sufficiently sudden conversion to entitle any man to be called remarkable. But Steffens was more remarkable still. I shall explain in a few moments that sacred mystery technically called "the singular conversion." Steffens stood—or sat—in Il Duce's space-filling presence, and when he walked out he did not even stumble over the first step of the singular conversion. He was a truly remarkable man, infinitely more remarkable for example than our most remarkable statesman, ex-Governor Alfred ("Al") Smith of New York who, after his audience with the far less overpowering Pope, walked away singing loud enough to be heard in Madrid and Mexico City.

Now, if some correspondent from Mars would interview Mussolini and all his fellow saviors of nations and societies, and not submit to being interviewed by them, he might make *them* realize that *they* are wishful Eighteenth Century minds roaring through a highly congested scientific civilization in streamlined Twentieth Century bodies. It would be too much to ask of these vociferous metaphysicians to suggest that they let a competent mechanic inspect their engines once in a while. They would merely smile vacantly as if they had not heard, and step on the accelerator. From their perfectly logical theories they have deduced a gloriously good time for themselves and all their passengers at the swanky night club just round the corner.

However, the fact is that about four happily inebriated logicians all have made the same deduction, without bothering to calculate how fast a streamlined car can travel on a modern hard-surfaced, cambered highway. The correspondent from Mars might convince them by a little simple arithmetic that they are all due to arrive at the happy corner at the same time. If he did, that would indeed be a notable conversion. Its like will be found on no page of recorded history. Being an observant immortal, the man from Mars would look ahead a little and enjoy the spectacular smash before it actually happened. He would not linger to clean up the mess of Eighteenth Century brains scattered all over the high-speed boulevards from here to Hell.

It is just possible that the Martian correspondent might return two centuries later to find a web of still faster boulevards radiating from the dangerous corner in new directions. And if he had learned anything at all from observing human beings, he would watch for another smash, this time in Twenty Second Century super-road-rockets manned by

Twenty First Century lunatics of logic all proving at once that Utopia was just round the corner. Between his visits, several Utopias would probably have gone up in flames. A collision between four or five unanswerable logicians can generate a great deal of sudden heat.

It appears to be a fact that our kind can transmute what all logic and reason would say is a highly promising salvation into a very actual damnation. Time after time it has been proved on paper that Utopia was just ahead. And time after time we have dashed our brains out on concrete facts while speeding to the heaven of our dreams that existed only in our credulous imaginations.

Logic and reason directed us. "That's what was wrong!" the spirits of the damned exclaim in chorus. "When logic and reason told us to take the turning to the right, we should have turned to the left." "But *we* did turn to the left," an injured chorus protests from a deeper pit. "And see where we are now." "Will both of you damned fools stop arguing, and shut up?" an angry shout demands from a still greater depth. "You two think you are the damned," the shout continues, "but you should see the state I'm in. Reason and logic told me to keep straight on down the middle of the road, and I did. Why, they never even bothered to call the ambulance. They just sent for the garbage collector, and here I am."

"Believe me," a recent arrival to the Lake of Fire remarks to the crimson vault above, "next time—if I ever get out of here—I'm going to let logic and reason go to Hell themselves. I'm going to ask science and invention the way. No; I'll be damned if I do. I'm going to find out for myself what the facts are, and I'm going to invent an asbestos bathing suit. Then I shan't care a damn if I do get smashed all to hell."

A terrific debate ensues. Logic and reason reverberate in sultry thunders along the glowing vault, and incandescent masses of facts as hard as steel shoot from the Lake to pelt the heads of the debators with flaming hail. But none is knocked out or silenced, since this would lessen the punishment of the others. So terrible is their chastisement that they look forward with joy to the ultimate damnation about to envelop them all. But as it laps their tormented souls they realize that they had not imagined a seventieth of it. This ultimate of ultimates is technically known in Hell as "the singular conversion." It comes upon them: each of the damned is completely emptied of his own beliefs and theories, and is filled with all those of all the rest. A miracle, you object? Not at all; beliefs and theories are multiplied to infinity in passing from soul to soul—or from mind to mind, if you have been emptied of your belief in souls—so that Hell suffers no shortage.

Those who have experienced the singular conversion are beyond salvation. May their souls rest as peacefully as they may; we can do nothing for them. But we may be able to do something for ourselves, which is much more profitable, if we observe how some of them took the first downward steps leading to their present state.

Our spiritual fathers need detain us no longer. They were singularly converted generations ago and are now no longer intelligible. Science and invention we can understand, and we shall put a single question to each. Invention was to have led mankind to a material heaven. Did it? Science is to repair the ravages of invention. Will it?

The first question will answer itself in the handful of exhibits presently displayed in the museum of human stupidity. Centuries would be required for an adequate inspection of the treasures in the grand hall devoted to

the history of invention alone. We shall attempt nothing so ambitious or so fatiguing. Half a dozen of the smaller cases nearest the entrance will show us all we need to see.

The second question is beyond us. Only one who had suffered the singular conversion would find any meaning in it; he might be induced to attempt an answer in exchange for a complete purging of all his beliefs, both present and future. Nevertheless, we shall offer in succeeding chapters some evidence from which those about to be damned may generate their own beliefs.

2. THEORY AND PRACTICE OF WANT

Invention and one pair of hands can do the work of many unaided pairs of hands. Sometimes an invention displaces practically all the hands in a given trade at one smash. Approximately that happened a few years ago in the glass-blowing trade. As all the glass-blowers had developed pairs of lungs like leather bellows, they probably all found immediate employment on the stage of grand opera. This transfer from blowing to bellowing really was quite considerable. Think of all the beer bottles alone that you see about you, and you will appreciate the magnitude of the cataclysm.

The effect just noted may be classified as mere mechanical change: a certain amount of matter—the mass of displaced workers—is moved from one place to another. Such changes can be undone by reversing the direction of motion, and this was actually attempted by the displaced British workers at the beginning of the present golden age of invention. They smashed the machines, anticipating that the human mass would immediately flow from the poorhouse instead of toward it. But they had overlooked the economic fact that money can breed on a properly starved

human population faster than the population itself can breed. Consequently machines can be replaced faster than they can be destroyed.

The population exploded, as it were, breeding with a fury until then beyond the conception of man—and of woman. As the number of replaced machines increased, the poverty of the workers increased also, and at a considerably greater rate. This boosted the rate of increase of the machines, depressing the standard of living of the workers still lower, and so on, until at last the workers settled down to their steady job of breeding and starving, and they thought no more of smashing machines. The fact is that they were now several degrees sub-human, and could think of nothing at all. Moreover, they were too feeble to smash anything, even if they had been capable of thinking of doing so.

So much for the merely mechanical changes consequent on the first major impact of invention on industry, over a century ago. Were there no more interesting changes, say chemical or biological? There were many such, too many, in fact, for mention here. We shall consider only one of these, a biological phenomenon familiar to nearly all of us, as this brings to a sharp focus the distinction between "might be," or "might have been," and "is." Whittier (I think it was) observed, "Of all sad words of tongue or pen, the saddest of all, 'it might have been'"—"been" in New England rhymes with "hen," not with "obscene" as in Old England. Instead of "sad" and "saddest," realists substitute "mad" and "maddest," or "stupid" and "stupidest." Until we get over yearning from the future to the past and back again, we shall continue grabbing for lifebelts that are essentially rotten. "Might have been" is frequently a substitute for the everlasting "if," and is so in the logic of invention.

The biology of invention is clearly seen from a very simple experiment. If you live in a clean modern city, you will be acquainted with but very few flies. Possibly you see only one or two a week. In the little California village where I am now, I have made the acquaintance of exactly one fly in two weeks, and him I have brought with me (for a pet) from the city in my suitcase. However, do not despair. Put half a pound of fresh raw liver in a sunny spot on your service porch. Within an hour it will be black and hissing. If you can nerve yourself to follow the course of events for a day or two, you will see something happening to that liver that you might rather not see.

What becomes of all the new generations of flies after they have eaten themselves out of house and home? Unless your neighbors are as thoughtful or as inquisitive as yourself, the younger flies probably expire very shortly of inanition. And unless you have been very careful about the screens, you may discover several hundred of the middle generation in your kitchen and dining room demanding all the sugar you locked away while the experiment was in progress.

Now, almost any normal person would call that a very disgusting experiment. Flies are so repulsive to clean people. But very few clean, normal people saw anything disgusting when human beings instead of flies seethed and starved on corruption in slums filthier than the mass which gave the flies their brief living. The few who were nauseated by the spectacle and tried to clean it up were assailed as "cranks" and "agitators." All this, I hasten to add, was over eighty years ago.

Only when the first lethargic starvation passed into the second stage, the stage of acute despair in which exhaustion becomes frenzy and life is better thrown away in one last bloody gesture of vengeance than kept, were normal, clean

people sickened. They hastily put in a few sewers. The sanitary engineers advised this precautionary measure to keep the cholera from seeping into the better residential districts. Sewers and promises averted revolution. Starvation rose to normal; the danger was past.

What would the logic of invention say to a crisis like this? What did it say? It said that the situation was totally unnecessary and should not have come about. Those living at the right end of the sewers—they used to call them “drains” in England, and were always talking about them at afternoon tea when other topics failed, so don’t be shocked—put the blame for this miscarriage of “might have been” squarely where it belonged. District visitors reprimanded the slum-dwellers for over-indulgence in beer and procreation when these were the only amusements available to the dispossessed. The virtues of “temperance” and “continence” were preached at “the poor” incessantly by bishops hacked like turkey-gobblers, each with anything from six to twelve children of his own. And what did “the poor” say? They said they were truly grateful and would try their humble best to do better in the future. Even the Devil turned away in disgust, wondering whether the human race was worth damning after all.

The logic of invention is quite clear on all this. If a machine, say one for making cotton cloth, with two human operators can make as much cloth in a given time as a hundred operators without the machine could make, what should follow? I have not the slightest idea what “should” follow, but I do know what did follow: slums for the operators and vast fortunes for the owners of the machines. The unearned excrement of the machine made the poor poorer and the rich richer.

A social logician, however, can tell us what "should have" followed. Since the machine increased one human being's output of cotton cloth about fiftyfold, it "should" follow that about one fiftieth of the time devoted to making cotton cloth before the advent of the machine would suffice to supply the market. What about the remaining forty nine fiftieths, more or less, of the time available originally? Why, say the logicians, it "would" now be free for gardening, or playing cricket, or gossiping, or just sitting with your hands folded and doing nothing if that is what you prefer doing. In short, the machine "should have" emancipated a very considerable number of human beings from the necessary drudgery necessary to keep body and soul together before the machine was invented. The machine "could" have supplied the greater demand occasioned by a decently human increase in population without enslaving anyone.

Precisely the same argument is applied to all machines and to all inventions which accelerate production of goods and diminish the number of human beings required to produce any specified quantity. We need not repeat the argument for railroads, mining machinery, hard-surfaced roads, electric telegraphs, and so on and on and on almost to infinity; it is the same as that for looms. Also the argument can be easily modified to take care of any sensible new demand created by the machines.

Now, did the machines enable the operators to devote an abundant leisure to the cultivation of "the Good Life?" Did invention emancipate the human race? Did it?

Any classical economist can point to the fly in the ointment that was to have softened humanity's callouses and give it a clean, firm, sanitary pair of hands. The machine, and hence invention, they point out, creates "new wants." For example, the loom created an all but insatiable "want"

for prettily flowered cotton prints, purchased, worn out, and thrown away in sixty days, in the avaricious bosoms of more and more old-fashioned girls, who had been going about in the most gosh-awful gray flannel "Mother Hubbards" that the more industrious could just wear out in six years. Vanity extended the glad hand of coöperation and clasped that of want. Even nice girls in the Scottish Highlands, who had worn nothing but woolen tartan kilts and good honest red flannel drawers all their young lives, began "wanting"—and demanding—white cotton panties. They got them. Now it is rayon stockings and not much else, even in the coldest winters.

Rayon, by the way, was one of those sudden, catastrophic inventions that scrap the major industry, centuries old, of an entire people overnight. It practically abolished the silk industry of Japan. And it all came out of a scientist's test tube. What else is going to come out of that same tube? Some anticipate a major world war.

The unclassical economists of our own brawling generation accept the "want" explanation of the classicists. Word by word they repeat the same argument. But there is a "radical" difference between the two schools of economic thought—if you can call it thinking. The difference is merely that the key-words, "want" and "wants," have quite different meanings in the two explanations. There is a further subtlety in the unclassical explanation, as will appear immediately: those who wanted things were wanted to want them. This inspired some of the most fervent missionary work to heathen lands the world has ever seen.

First in the unclassical explanation of the collapse of invention as a lifebelt for our stupid race, is the higher, or "upper," meaning of "want." This distinguishes the "wants" of the "upper" classes from those of the "lower."

When to their astonishment the first owners of machines saw how much money could be made by machinery out of raw materials, including human flesh and blood, they began to want all manner of things they had never wanted before. Although these early exploiters of the machine were sadly lacking in imagination, and wanted only the sort of things any untrained animal might want, they wanted those things in abundance, and they wanted them long, so that their sons and their sons' sons might inherit the earth and all its machines.

They wanted more food than is healthful for a human being, and they ate it. They wanted more raiment than Solomon in all his glory ever arrayed himself in, and they arrayed themselves fearfully and wonderfully in all of it. They wanted more brandy than was good for their complexions, and they drank it. They wanted more women than the law allowed, or than Solomon ever had, and they had them. They wanted bigger houses than a family of twelve could live in comfortably, and they lived in them. They wanted more lackeys and more servants than they could manage, and they mismanaged them. By the age of forty, or forty-five at the most, they were beefy lumps of impotent flesh, crimson and carbuncled of face and slow-moving of body, full of choler and explosive wrath, living masses of discontent to themselves, brutal tyrants to their workmen, sanctimonious hypocrites to their children, and domineering bullies to their wives. Even their God turned away in disgust, wondering whether his elect were worth saving after all.

Necessity may have been the mother of the prehistoric inventions, like the wheel and cooked food, but it certainly was not the mother, or even the great-great-grandmother, of the hundreds of thousands of superfluous gadgets recorded

in the patent offices of all civilized countries today. Greed spawned most of them. Private yachts, shooting-boxes, vast enclosed parks with "Keep Out" posted every hundred feet, these things were all invented in the machine age, and yet none of them can be called a necessity, even for the "Good life."

Nor in the higher, immaterial realm of invented wants was necessity the mother. Invention reversed the traditional rôles and became the mother of necessities to those who could afford them. The sons and grandsons of those first beefy wanters were sent up from Eton and Harrow to Oxford and Cambridge to seek a mediaeval education confirming them in their divine rights, only too often to be sent down again for mental incompetence or disturbing the peace. But their brief sojourn in what then passed for civilized society had taught them a great many new wants, all of which stimulated invention. New inventions to increase wealth for the gratification of newly invented wants were forced on unwilling workers who wanted only a living wage at the exiguous margin of subsistence.

This intermediate stage of invention was quickly passed. Rapacity and insatiable greed offered themselves as candidates for mothering the next generation of inventors of wants. These duly arrived at the appointed time and presented the workers with more efficient machinery to squeeze money out of their hides for the satisfaction of sophisticated wants.

The modern wanters seemed to want the earth. They got practically all of it that was worth wanting. Wanting became international rather than narrowly national and uneconomically selfish as it had been in its inexperienced youth. The greater wanters knew each other by sight wherever they met, and called one another by their first

names in London, Berlin, Paris, Rome, Madras, Singapore, Colombo, Hong Kong, Shanghai, New York, Chicago, and all way-stations, also in all the stock exchanges, gambling resorts, and plain dives where wanters transfer unwanted currency to other wanters. Whenever two or three decided they wanted a war to increase profits, they got it, and the rest of the world—excepting always the more avid wanters—paid with a century of wars for the gratification of wants which the wanters themselves had invented.

To keep up with the demands of ever-mounting wants, more efficient killing machines were invented, also more untruthful rationalizations of facts which might not have sat easily on the stomachs of the killers. To kill your own brown brother because you do not like the color of his skin is understandable enough. At least it is human. But to kill him because he refuses to buy two yards of calico from some manufacturer in Manchester you never heard of, is harder to like. Accordingly the wanters decided on a wholesale program of nationalistic education. For this they wanted political power, and they got it. With their own cash they bought it, to be their blushing bride. In democratic countries the wanters delegated the duly elected representatives of “government *of* the people, *by* the people” to get what was wanted; in undemocratic countries this delegation of authority was not necessary, as the chancellors and others near the fountain-head of all want were able wanters themselves.

In all this golden era of want, our old acquaintances, The Society of Friends of Adam and Eve for the Pursuit of the Good Life, were among the most efficient propagandists for the gospel of want. At the point of the cross, or the sharper point of a bayonet if conversion by the first method seemed likely to take too long, they persuaded those who had never

heard of Adam and Eve to embrace cotton pants and to wipe themselves off the face of the earth as quickly as possible with tuberculosis, smallpox, measles, common colds, alcohol, Christian morality, and syphilis. When the wiping-off process threatened to take too long, invention handed the wanters a machine gun. And when this proved too slow, bombers laid big black eggs that suddenly went bad with a terrific bang all over the landscape, from Afric's torrid clime to Afghanistan's stony hills. Where "the natives" were too numerous for cheap extermination, even by the inventions of modern warfare, they were encouraged to increase and multiply, to replenish the earth, and thus bring their wages for taking up the white man's burden just within the extreme margin of subsistence.

But in simple justice to the wanters, it must be remembered that without their incessantly increasing wants, the spread of civilization—to say nothing of that of syphilization, as in the South Sea Islands—would have been greatly retarded.

We may like civilization, or we may not, and it seems to make very little difference how we feel about it. The thing spreads like an epidemic that nobody has yet succeeded in stopping. If it cannot be stopped, the quicker the whole world catches the contagion, the better it may be for all of us. However, science and invention may yet find a way of stopping the epidemic before the last uncivilized man dies. A really first class world war—not an amateurish affair like that of 1914-18—would help. In the meantime we must not deprive the wanters of their just claim to be called the greatest propagandists of western civilization since the crusaders. A single expedition of theirs has brought back more wealth in two months than all the crusades looted in two centuries.

The creation of wants has another aspect which the new "radical" economists declare is of fundamental importance. This is the art of making potential wanters out of people who "want but little here below, nor want that little long." The want here is only superficially similar to that of the Highland lassies who wanted to throw away their red flannels for good, and did. In that case the wanters co-operated wholeheartedly, snatching the new cotton garments out of the travelling salesmen's hands. In the present case, the prospective purchasers—in India—do not want the goods at all, and refuse to have them even as gifts. (Parenthetically, the Chinese did not "want" to keep on smoking opium till a persuasive war made them change their minds in the interests of trade.) As a slight variant of this distressing situation, other prospective purchasers—also in India—of another commodity are perfectly satisfied with what they have. They manufacture it very cheaply themselves and sell it at just enough more than the cost of the raw material to pay operating expenses. But in both cases thousands and thousands of machines of the master wanters are turning out huge quantities of each product, and there are no buyers in sight for either. No matter how far they depress wages toward the absolute zero of safety, below which they cannot operate without certainty of a catastrophic explosion, the master wanters cannot sell their products at a profit. But profits are the life-blood of trade. What in the name of reason is to be done?

The consulting engineer has just reported that an explosion is imminent, and has left the city in a plane chartered only ten minutes ago. They glance wildly about them and observe, huddling wide-eyed in a dark corner they had never thoroughly explored, two virgin markets. Shouting

orders to the mechanics to speed up production, they fall upon the two and rape them. The whole transaction is quickly over, and nothing has been lost but honor. The two girls depart, sobbing, one with a cotton handkerchief as the price of her virginity, the other with half a handful of grayish salt as the price of hers.

A little man by the name of Gandhi, clad in enormous horn-rimmed glasses and a g-string examines the handkerchief and the half handful of salt. He shakes his great melon of a head. "Both poor quality, I should say." He writes a courteous letter of protest to the proper authorities, respectfully imploring relief for his outraged clients. The reply comes promptly; "efficiency" is the wanters' watchword. "As neither girl was a virgin, relief is denied." The little man writes a short note on the wanters' reply and sends the messenger back with it: "For your purposes, both were virgins. Immediate relief is demanded."

"So he 'demands,' does he?" the wanters sneer as they read the note. "Let him try to get relief. Sergeant! Beat up all followers of this crank. Order your men to ride their horses over any that lie down in the road. It's an old trick, and it won't work."

But it did work. "Passive resistance" put the cotton industry of England strictly on the hog and nearly all the workers engaged in it on the already overburdened dole. The Indians returned to their prehistoric spinners and bought no more handkerchiefs from Lancashire. And although the "police"—soldiers—obeyed orders to the letter and used their iron-tipped staves to club into insensibility all who approached the sea to get brine for the making of salt, they could never keep ahead of that procession coming down to the water. There are a lot of "natives" in India, and every ten years there are thirty million more

of them—the unwanted foster-children of science and invention.

Giving up the impossible race with fecundity, these particular wanters called a conference of all their grown-up children, now beginning to want things of their own. They proposed to hang together and divide the profits. It was agreed. They are still hanging onto their profits with both hands, and onto the edge of the precipice with both eyebrows.

Two resolute-looking highwaymen are striding rapidly toward the edge of the precipice, not with the intention of jumping over it, but of stepping heavily on the heads of the hangers-on. As the latter have their eyes below the level of the ground, their yell will be very sudden when they do let go. The two highwaymen are named Science and Invention, and only they themselves can halt their progress toward the edge of the abyss.

As nobody can see down to the bottom of the abyss, full of mist at this moment, I can not predict who will get the profits when the hangers-on have their heads stepped on and let go. I would hazard a guess that they will bounce off the rock bottom like rubber balls and come up smiling, all their profits still clutched securely in their fists. Perhaps that is what they are waiting for; even they, superwanters though they are, cannot raise themselves over the edge by their eyebrows. Even a Samson would require at least one hand to get himself up and out, and those fat, short-winded men are no Samsons. Moreover, each has both his hands fully occupied.

A charming middle-aged English lady, who often tells me all about England which she revisits frequently, states it is her considered opinion that Mahatma Gandhi should have been shot before he could stir up all that fuss over cotton and salt in India. To my protest that Gandhi and his

cotton and salt are only symptoms of some deeper disorder, she replies that she has seen some very deep-seated disorders removed by a single treatment of blue mass and black draught. When I propose that she and the millions who, she assures me, believe precisely as she believes, true blue masses and black draughts on those two highwaymen marching toward the abyss, she snorts "Faugh!" Anyhow, it sounds like that. "They'll trip over their own feet and break their silly necks before they ever get to those brave men hanging on for their dear lives." "And dearer profits," I suggest, just to enrage her. When she is thoroughly steamed up she is as magnificent as a locomotive. I hastily get out of the way before she can run roaring over me. As the door slams I hear her last defiant toot: "And where would *you* be, my man, with your science and your invention, if it weren't for your own profits?"

I have often wondered myself. In jail probably, or the breadline. And I am deeply grateful for the chance to have made whatever meagre profits I may have made, and I sincerely hope that those two highwaymen won't rob or swindle me out of my last dollar. I "want" to end my days in peace and moderate security. What is the chance of doing so if some inventive idiot makes all the steel stock, all the telegraph and telephone stock, and so on all down the list of industrialized science, bales of worthless paper overnight? It could happen. The talkies put the silent pictures out of business in very short order indeed. And television is just round the corner, grinning at all the happy people secure in their little radio businesses.

So, after all, perhaps my English friend is to be excused for her bloodthirstiness toward that obstinate little man with the melon head too big for his body. Most of her investments were in Lancashire cotton mills. However, I

still believe she wanted to shoot the wrong man. Science and invention are the real culprits, if you look far enough, and not even a bishop can shoot either, although several have tried. Neither science nor invention will submit to a moratorium. We, not they, may be walking to the mortuary.

3. MUSEUM PIECES

The policeman has just shouted through the main entrance that the museum will be closed in twenty minutes, by order of the Proper Authorities, and will remain closed to the public so long as the said authorities see fit. We must hurry on if we are to see anything more. Perhaps we have seen more than enough already. But those cases shoved as far out of sight as possible down the dark alcove to the left look interesting. There is just time for a hurried inspection.

The first is rather a disappointment. It seems to display the miscellaneous contents of a garbage can, probably late Georgian or early Victorian. Looking more closely, we make out what some of the relics are, and we realize with something of a shock that all this rubbish was once the most treasured possession of men, women, and children who fought like wild beasts to retain it.

Here, for example, is some rat-bait, offered for sale in 1842 to the partially unemployed of England at a penny a portion. The portions had proved inadequate to tempt the starving rats, so were offered to the workers. The stuff was alleged to have been mutton. Beside it is a halfpenny worth of bread. An explanatory card informs us that these exhibits have survived because the partially unemployed had few halfpence to pay for anything, their average being about one shilling (twenty-five cents) each a week—say fifteen dollars a year to be generous.

A "depression" had temporarily interrupted industry and trade. This particular depression was due only partly to "overproduction" caused by too many machines. An exorbitant tax on corn (we call it wheat), the staple food of the English working class, caused at least part of the distress. And why was the tax imposed and retained? To increase the incomes of farmers and others who owned property and had votes. The working men at that time had no votes. They were mere property, like pig-stys or tenements. Now they have votes, and what have they? Jobs?

If this exhibit and some of the others we shall see in a moment make you want to plant your fist in somebody's face, aim at those fatuous optimists, full of sweetness and light, who go about telling everybody that conditions *now* are very much better than they were *then*. Of course they are better. If they were exhibit by exhibit as bad now as they were then, Hell would have blown its lid off months and months ago, and all the optimists would now be sailing Heavenward to exude all their sweetness and light in one sweet hymn of praise to their heavenly father, who lets not one sparrow fall to the ground. No; hawks and other birds of prey get them first. That is why you find so few dead sparrows lying about. But *how much* better are conditions now than then? How long have we had to improve conditions? And what terrifically powerful engines of improvement have been invented in the century, more or less, since "then"? What have we used these engines for? If you don't know, read J. B. Priestley's *English Journey*, or some of our own government reports.

In the same show-case, not far from the morsel of mutton scorned by the rats, is a declaration of strategy by the workers of the 1840's. They admit that property no less

than the lack of it has its rights; they are not out to pillage and destroy: "We must shake our oppressors well over Hell's mouth, but not let them drop in!"

Apparently it was easier to brag of shaking a scare into the "oppressors" than to do it. Or perhaps a halfpenny-worth of bread at infrequent intervals was insufficient to build up the necessary muscle. Anyhow, nobody seems to have been very badly frightened, and succeeding declarations have a defiantly angry ring. The poor assert their "rights" to a share of the wealth of the rich. They *demand* assistance of the Government as their "right" before God and man. Work or no work, out of a job by force of circumstances or by deliberate choice, it makes no difference: the "lower" classes demand that the "upper" classes "share their wealth." Sometimes the demand is qualified, but only speciously: "If you take away the industrious poor man's right to relief, all other advantages crumble into dust and become worthless." Presently "industrious" is omitted.

Are we dreaming? We look at the date on the exhibit and pinch ourselves. Yes, we are awake. The rubbish in that case is over ninety years old. "The man who is without a home has a quarrel with society." Surely the curators have got the dates on the exhibits all mixed up? We look more carefully. No, everything is correctly labelled, and the last extract from some unofficial bill of rights is also over ninety years old.

What imbecile called the past hundred years "The Century of Progress?" Here we are, almost a hundred years farther along in time than the mouldy and yellowed offals in that glass case, and even a close observer has difficulty in distinguishing between that exhibition of human stupidity and our own. Even the rat-bait can be matched. Here is a portfolio of enlarged snapshots—beautiful stuff,

real art, some of it—dated 1932, of men, women, and children thoughtfully or anxiously fishing for their food in the garbage cans of luxurious hotels. But perhaps the comparison is unfair. We do have food enough to throw away. That portfolio, and others like it, got out by reputable and conservative publishing houses, can be picked up second-hand for a half a dollar. Inflammatory stuff? Well, perhaps. But Hell always was somewhat inflammatory. You can't put it out by spitting on it.

Our inspection, as I have repeatedly emphasized, has nothing whatever to do with those strictly meaningless terms "right" and "wrong." In this particular instance, what are the salient facts sticking out from our hasty inspection? First, mechanized society is about as slow in the head after its fourth or fifth major "depression" as it was after its first. About a century ago depressions were ascribed, literally, to the Will of God. So were earthquakes. One major earthquake a generation back persuaded us to remove earthquakes from the realm of magic to the domain of experiment. Half a century hence we may have learned enough to build so as to avert the greater disasters. Anyhow, we are trying to learn, and are going about it, not with prayer and fasting, but with seismographs, geological surveys, and statistics. The day before yesterday depressions were also removed from the dark region of black magic, but not very far. Today we assign depressions to the metaphysical inevitabilities of "the business cycle," and draw some very impressive graphs. When we learn to draw equally impressive graphs of human nature, we may begin to understand something. Those graphs are not likely to be drawn by logicians.

The second fact that sticks out for all but the wilfully blind to see is this: neither invention nor science has yet

been able to prevent recurrent misery for vast masses of mankind. Nor have they eliminated the recurrent threat of violent revolutions when whole peoples go insane and tear one another to pieces in the destruction of their societies. Possibly we are still in the paroxysm of that most violent of all revolutions in history, when the civilization of thousands of years was swept back forever into the past by the application of science and invention to our daily lives. Why should we expect such an upheaval to reach its maximum in less than two centuries? It was without precedent, and we have no criterion by which to judge its probable severity. For all we can say it may last a thousand years—if our race is to last that long.

The next exhibit is less gruesome than a hasty glance might suggest. At first we think we are looking at a glass case filled entirely with shrunken and toil-worn human hands. But we are not: the objects are not hands, but “hands”—those disembodied abstractions into which the machine transformed living, sweating, overworked human bodies.

Before invention ripped the vitals out of the old society, “master and man” denoted a real and close association between an employer and his employees, whether in the field or the trade guild. There was nothing condescending in the master and nothing servilely subservient in the man. Or, if not precisely nothing, then very little in the vast majority of associations. The master knew his men and their families, and it was to his interest to see that they prospered. The man knew from daily observation that the prosperity of the master increased his own.

Invention changed all that. Frequently the man did not know even his master’s name. The master for his part ceased visualizing his men as men, and saw them only as

a certain number of "hands" in an expense account. The overworked hands let work slide when they dared—in moderately good times—and reached up attempting to grasp some of the master's profits in the form of higher wages. The master, however, by this time, as likely as not, was no longer master of the business or of himself. He in his turn was mastered by an invisible but powerful army of bondholders and stockholders, all clutching at profits. Between greed on his right and greed on his left, the master as a rule chose to pacify the right. The "hands" could be put off for the moment with a penny apiece and a promise. When they became too grasping, they could be discharged in favor of cheaper hands.

But at last a day of reckoning with facts instead of theoretical promises arrived, and the master looked up from his balance sheet to find one tremendous Hand, the united hands of all the "hands," being shaken in his face as a very threatening Fist. From that day to this the history of production has been a repetition of the shaken fist and the grudging compromise over and over again, with frequent lockouts and riots generating ever intenser hatreds on both sides. Truly, we are a likeable lot.

Every step of the way has been fought with curses and paving stones, bricks and bullets, blackjack and nightsticks, cruelty and fraud, chicanery and collusion. Time after time each side has sold out the other for a temporary gain not worth the price. And as frequently the "wanters" on either side have lied to their clients and have swindled them into bargains that only a fool would accept. When thuggery and sabotage prove too ruinous to both sides, they get together round the so-called "conference table," and bang their fists on the mahogany till the inkwells dance. Reasonable men, all of them.

Is there nothing in this sorry exhibit to give us an esthetic thrill? Yes, there are a great many objects of artifice, but each has been purchased only at an exorbitant outlay of time, money, cruelty, and hatred.

This fragile piece in the lower left-hand corner, for instance, is labelled "child labor." Next to it are two badly battered relics, labelled respectively "minimum wages" and "maximum hours." From the relative sizes of these last rare specimens, the amateur archaeologist might infer that the careless curator had interchanged "minimum" and "maximum" while lettering the cards. But it is not so, and he has faithfully followed the scriptural precept that the least shall be greatest and the greatest shall be least. The hasty mathematician must not jump to the obvious arithmetical conclusion that the two are therefore necessarily equal, for in the divine economy of wages and work the least can exceed the greatest.

A closer inspection of these curious pieces shows that they are really not half bad as efforts of human stupidity to ape intelligence. Some foreign substance, possibly just plain dirt, seems to have been carefully scraped off the thing labelled "child labor." We can barely make it out. It is a sort of legal paraphrase of certain theorems from the Book of Genesis. We learn that because Eve sinned and thereby cursed women with labor-pains and men with labor, therefore the fruits of her body—how beautifully they phrased obstetrics a hundred years ago!—shall eat what bread they can get in the sweat of their infant faces.

What is properly called "child labor" became a highly moral social institution with the first simple factories, before the revolutionary textile machines began kicking up so thick a dust the sweated children could not see their neighbors ten feet away. Four or five was the normal age

to begin carding wool for as many hours out of the twenty four as a watchful mother could keep her offspring awake. Twelve to fourteen hours a day was not unusual. Picking oakum was another task specially created by Providence to strengthen childish fingers and broaden infant minds. The "balsamick odour" of the oakum not only delighted the youngsters but filled their weary lungs with renewed health and vigor. Today that same stench fills the mouths of convicts in uncivilized penitentiaries with unclean oaths. And they pick away at their balsamick task only six hours a day instead of twelve or fourteen. Luckier youngsters were permitted to paddle all day long in dyeing vats.

When the "home industries" languished, and the sturdy young wool-carders, oakum-pickers, and dye-treaders were now old enough to take on a real child's job, they graduated into dust-filled factories, where great thumping machines kept them on the hop fourteen hours a day, with one hour out for dinner. Other meals, if any, were wolfed on the hop. But here invention really did something for the children. More than agility is required to keep out of the clutches of a steam engine and all its greedy appurtenances of unscreened belts and wheels; wakefulness also is necessary. Therefore, after a terrific battle between the cranks and agitators on one side and the factory owners on the other, a law was passed forbidding the employment of children *under ten* in factories run by steam.

How on earth did this next relic get into the same case with that humane legislation I have just described? It is the history of the "seventy years' war" which ended in the compulsory installation of safety devices to protect workmen against illogical rip-saws and other flesh-hungry inventions of the industrial Devil.

Beside it is a similar history of the war, fought to a suc-

cessful finish only a few years ago, between the railroads and the travelling public over the installation of the block-signal system to lessen the danger (practically to zero) of train wrecks.

As these are obviously careless mistakes of the curators, we may disregard them and return to our children.

What other careers were open to the ambitious lad or lass of five? Why, there was mining engineering, in either the coal mines or the iron mines. With all those new industries forcing themselves up like toadstools all over the poisoned countryside, mining was obviously the proper caper for the forward-looking young man or woman. So at the age of five they descended daily into the pits, going down before daybreak and coming up only after sundown, to sit all day in the dark, without a companion, opening and shutting the doors for ventilation. A year or two later, if they had been good, they were promoted. Since human flesh has always been both cheaper and tougher than horse flesh, the graduates from door-jerking were encouraged to drag the loaded cars up to the pit mouth. Women, of course, were almost as cheap, as one sturdy wench or two old beldames could drag as much as six children.

“Male and female created he them.” This declaration is also to be found in Genesis. Considering its source, we might have expected the good Christian mine owners to admit its truth less ungraciously than they did. However, it took another knock-down and drag-out fight to get it through their cast iron heads that there really is a detectable difference between the sexes, even of very young children. Only eighty five years ago the law prohibited “females”—so designated in the statute—from going underground at all. The females of course were those under the age of puberty.

The same reform also made it unlawful for men under ten years of age to engage in the subterranean activities of mining.

Those careless curators surely must have made a mistake this time. Right next to these relics of 1842 is a perfectly beautiful piece of our own Southern faïence, dated 1936—as nearly as I can make out. Three out of five State Commissioners appointed to enquire into the facts of child labor, report that, “The . . . children always look well and the medical evidence abundantly proves their general health . . . The children after their day’s work appear as playful as schoolboys come out of school.” And what schools they come out of! That is, if they ever get into a school for any length of time. Hang it, I see that the mistake is mine again; this three-fifths coat of pious whitewash is really dated 1842, and refers to the young “males” who descended the pits with their equally young “female” companions before the latter were very properly chased up and out in the interests of public morals.

Another Commission is not so complimentary about the little weavers. It complains that the young male of the species present a very depressing spectacle with “his dirty white apron and feminine look,” as he drags his way home—or to the poorhouse—after his fourteen hours’ hop, skip, and jump through the dust and uproar of the cotton mills. How many years, by the way, did it take to blow the dust out of such mills?

Oh, in passing, before we look at the next curiosity, what is that dazzling thing over at the right? Nothing more than a flaming denunciation as “revolutionists” of all those who would prohibit children *under nine* being sent down to sit all day in the black of the mines.

Two further specimens from this same rich treasure

trove will be about enough. Both are curiously elaborate stupidities, and we can spare only the most superficial glance. One is truthfully labelled "pauperism of children," the other bears the romantic lie "education."

The explosion of population consequent on the great industrial inventions has already been noted. Who took care of all the children? The parents, naturally—or more often "unnaturally," as any sentimentalist will see presently. That is, when the parents and their innumerable offspring could earn enough between all of them to keep the so-called family from disintegrating through the cankers of poverty and starvation. Otherwise the parish stepped into the father's place and the poorhouse into the mother's. These step-ins supported their human burden in the manner customary with most step-parents.

Theoretically, the children were protected by the poor-house and the parish, and were brought up to be sturdy, self-reliant little rascals fearing nobody but God and honoring nobody but Queen Victoria. Actually they were handed over bodily to the owners of the mills, mines, and factories, and were frequently treated with a ferocious brutality that might have made the stoutest-stomached queasy. I have a pretty stout stomach myself, but the pious rationalizations of that inhuman—pardon me, I meant to say human—degradation of helpless human beings little more than infants, makes me sick. Among the more plausible apologists we find tenderhearted ministers of the gospel of Jesus Christ. "Suffer little children to come unto me" was a favorite text at mass funerals of children under seven who had sacrificed their lives to industry.

If you want an instance of what those young paupers endured, consider the case of young Blincoe, recorded in John Brown's memoir of that juvenile ward of society.

This is an extreme case, I know; still it is a case. Blincoe was assigned to a Lancashire cotton mill. When he could not keep pace with the machinery, the foreman suspended him by his wrists, to a crossbeam above the machinery, "till his agony was extreme." To avoid the machinery he had to draw his legs up every time it came out or returned. In the same mill it was a favorite sport of the overseers to lift the "apprentices" by the ears, "shake them violently, and then dash them down upon the floor with the utmost fury."

That was an extreme. At the other extreme were the equally rare employers who treated their juvenile slaves with benignity. Between the two stretches the whole spectrum of man's brutality to the helpless, heavily loaded toward the sinister end, when brute nature is not restrained by laws outside itself. Note particularly that in the extreme case of Blincoe it was not the mill owner who "took delight" —as stated in the full report—in making a beast of himself through physical brutality. It was older members of Blincoe's own class. They themselves might well have been graduates of the slum and the poorhouse. And yet there are millions today who believe that the "proletariat" will govern with mercy and compassion for all men if and when it achieves its coveted dictatorship. Take a look at Russia. All of the testimony which has come out of that self-contradictory country cannot have been one hundred per cent false; some of it has been given by proletarians themselves.

A sentimentalist might wish to know where mother-love and paternal affection were all this time. They were out taking a long walk. Let the government inspectors tell how the parents went walking down the dirtier alleys and byways of profit. These men were not theorists or propagandists for a new social order. Nor had they any axes

of their own that needed sharpening. They were paid to do their jobs of finding out the facts. Here are the reported facts. "The creatures [children] were set to work as soon as they could crawl and their parents were the hardest of task-masters." Only eighty five years ago mother-love and fatherly affection were being quoted on the open market at the following rates. "The crying reproach in our mining population is that of the parents sacrificing the best interests of their children by sending them to work at the earliest possible age in order to profit by such small sums as they can make." Did the Commissioners intend that sarcastic pun on "crying"? Fifteen years later (1866) the market was still depressed: "Very young children . . . in many branches of manufacture are kept at protracted and injurious labor in small, crowded, dirty and ill-ventilated places of work by their parents. It is unhappily to a painful degree apparent . . . that against no persons do the children of both sexes need so much protection as against their parents."

In passing I may mention an acute crisis which affected all classes from the richest owners to the paupers in the poorhouse, brought on by overproduction of children and child labor. Fifty five per cent of all children born to laboring parents died before the age of five; of laborers—men and women—who survived beyond the age of five, forty five per cent died at the average age of eighteen. These figures are for one industrial town and are probably a fair sample for all. The burial of all these corpses, many of them ripe with cholera, dysentery, typhus, and smallpox, the last two of which were endemic, sowed the scanty hallowed ground of the churchyards with death and polluted the water supply. Such was the progress of the human race under the spur of invention.

The last specimen we shall glance at in this show-case

is mislabelled "education." There was none worth mentioning. Those who "agitated" for free schools where the children might be taught "the three R's" were assailed as atheists by the clergy, as anarchists by the capitalists, and as robbers of the poor by the parents. The clergy had a vested right in their incredibly inefficient "parish schools," the capitalists in their potentially taxable profits, and the parents in the earnings of their offspring. We need not inspect any of the mildewed arguments displayed with this exhibit; if we are interested we can hear their faithful echoes in any number of places today.

At last, however, the parents were converted by their children: the littlest devils were getting all the jobs. They were much cheaper than adults of fifteen. The capitalists were the next in line, when a "depression" turned forty thousand vicious young savages loose at one swoop to smash windows and steal. The clergy held out the longest, and have remained the most skeptical to this day. Schools were provided reluctantly. The first were "dames' schools"—fetid holes tyrannized over by decrepit wrecks of men and women, where frequently the domestic animals shared the classroom, adding their stench to that of the filthy teacher and his or her totally barbarous pupils.

What does the man from Mars report on all this? "There is a lively debate between two schools of terrestrial anthropologists going on at this moment. One school maintains that Invention carried man farther away from his ancestral beasts; the other insists that invention transported man toward the beasts. To a Martian it is perfectly clear that the first school is right: Invention did carry mankind farther away from the beasts. For, who ever heard of a she-cat or a she-dog devouring her own offspring? Or has anyone ever observed any of the larger apes forcing their

young, or the young of other apes, up the coconut trees to fetch down the food before the hands and feet of the young apes could gain a precarious hold on such irregularities as the trunk of a coconut palm affords? The supposition is preposterous."

The man from Mars sounds almost as positive in his verdicts as the Supreme Court was in the days of our grandfathers. As the policeman may be back at any moment now, we must hurry along to the next case, appropriately labelled "Hands and Feet." The "Hands" are of the same kind as those we saw being shaken as fists; the "Feet" belonged to those in whose faces the fists were being shaken, and were frequently employed to kick the shakers out of jobs and into the poorhouse. Briefly, the exhibits in this case have been arranged—no doubt unconsciously enough—to demonstrate that one hundred years of constant strife between employers and employees has made only a slight impression on our all but undentable human stupidity.

There are a great many differences of detail, of course, but the exhibits of yesterday, or of the last century, can be matched by others as fantastic from today. Instead of the poorhouse we have the dole—they had that back there, too; instead of fists we have had an occasional bomb; instead of kicks we have tear gas, and so on, all down the list. Mutual distrust and wilful misunderstanding remain constant. Even the legislation, some of it viciously futile, some of it temperate and constructive, can be matched decade by decade down the hundred years. The same shouts of "right" and "wrong" are heard all down the noisy century, and the same consciousness of virtue that animated each side to an astounding obstinacy and self-righteousness, puffs up the bosoms and inflates the heads of both sides

today. On the sidelines, we who follow the fluctuating disorder shout the same unhelpful encouragements to whichever one of the brawlers is the less likely to injure our selfish interests. Perhaps Adam Smith was right after all. Still, his remedy made us all beastly sick. Nevertheless, both sides still take a swig at the bottle occasionally, as we shall see in a moment—if the policeman will let us.

The battle of the hours was fought half an hour at a time, and each time the working day was shortened, output increased. Part of the increase was of course due to invention, but the most of it came from the greater efficiency of human bone and muscle after proper rest. Yet, as late as 1925, we hear the president of a great steel corporation assuring the world that twelve hours a day in a rolling mill, the men stripped to the waist and sweating—as they said—like hogs, seven days a week, with an eighteen hour shift at least once a week, was healthy. Possibly it was, for the men. But it was unhealthy for production. When the hours were reduced, production increased. All this “might have been” discovered peaceably. Was it? Our justly famed American practical sense scorned to look at the facts revealed by the experience of “those damned foreigners.”

The exhibits labelled “trade unions” and “unionism” display a warning in startling red: “Handle with extreme caution; highly explosive.” Perhaps we had better not even look at them; there may be photoelectric cells or something of the sort in our optic nerves that will touch off an explosion. Turning our backs on these infernal things, we merely remember: it was only in 1871 that England repealed the law which made trades-unions illegal. Four years later, repeal of the law of “conspiracy” removed a constant threat of dire punishment for all who sought to bargain collectively for their labor. These and similar

acts precipitated the battle of the “closed shop,” still raging furiously.

Throw a bone to two mastiffs and observe what happens. In spite of the undeniable excellence and disinterestedness of its intentions, the legal mind appears to have a positive genius for sowing dissension where agreement “might” prevail. Tradition and precedent are sacred, observation and fact profane. At the risk of a sudden assault from the rear, I shall quote verbatim from an Associated Press dispatch for July 21, 1937, to illustrate the sanctity of precedent.

“NEWARK, N. J., July 21. Labor contracts providing for closed shops fell under a chancery court ban today as ‘illegal and unenforceable.’ ”

Now, we are not concerned here with the merits of the open shop against the closed, and I personally have no inclination toward the one or the other, because I know nothing whatever of the facts—if any—available concerning either. Our interest is only to see by what process the “ban” was generated. The Vice Chancellor himself tells us. The dispatch continues, quoting our informant, the V.C.:

“Too often the ear of the court is tuned to the voice of the mob rather than that of reason. By tolerant and temporizing decisions, liberty is constantly being judicially lost. Within less than half a decade, more constitutional rights have been sacrificed by supine, tolerant and vacillating authority than can be gained by a century of reaction.’ The Vice Chancellor quoted the following from a United States Supreme Court decision, handed down in 1892, to indicate the change taking place in labor relations: ‘Whatever enthusiasts may hope for, in this country every owner of property may work it as he will, by whom he pleases at such wages and upon such terms as he can make; and every laborer may work or not, as he sees fit, for whom,

at such wages as he pleases; and neither can dictate to the other how he shall use his own, whether property, time, or skill.'

"Commenting on the quotation, [the Vice Chancellor] said:

" 'We have gone far since those words were written. The boasted liberty of the citizen and the vaunted security of individual property are no longer what they were. Both employer and employee now dictate to the other "how he shall use his own, whether property, time or skill.' ' "

Is that an appeal to logic and reason, or to facts, or to both, or to neither? Whatever it may be, it is in the great tradition of all major disputes between employer and employee for the past hundred years. It is neither right nor wrong; it is a fact. But again, for about the tenth time, it does not follow that any other attack on our stupidities would vanquish them.

Now, what has all this to do with invention? Everything; or rather invention has had everything to do with this: invention brought it all on—invention, that was to have floated us safely to a veritable heaven on Earth. If you doubt it, look about you in the history of the past century and a half for the monuments invention has raised to itself. Invention set "master and man" at one another's throats. One of the greatest depressions of all history was the direct result of a single invention. When the Bessemer process made cheap steel possible, the whole vast iron industry and the scores of subsidiary industries directly contributing to it, were scrapped overnight. Starvation stalked many a master then, as well as his men. This, and many a disaster like it, are on display in the museum of human stupidity.

Perhaps the choicest of all the exhibits are those replicas—

about a dozen of them—of the rare original now well over a century old. The replicas are dated about twelve years apart, and each is an angry warning that any attempt to plan ahead and mitigate the next disastrous depression, or perhaps postpone it indefinitely, is evidence of criminal insanity.

We must hurry to the exit, or we shall be thrown out. What is that pathetic-looking rag hanging on a rusty nail on the left wall of the alcove? Can it be a deflated lifebelt? It is: the one heaved at an unreceptive humanity by Robert Owen about 1825. Owen believed that a pleasant environment and healthful occupations, especially for the young, would transform a snarling human society into a happy harmony of loving, unselfish beings. He believed that. Like Lincoln Steffens, he was converted by facts. An ideal colony of about one thousand, operating on many principles that would now be labelled communistic, quickly dissolved in the biting acid of human nature as it was about 1825. Owen's lifebelt was only one of many like it thrown to desperate men perishing in a sea of inventions.

Great Scott! We have been followed all this time. A seedy-looking fellow with a very red complexion now sidles up to us. "I show you something better, mister. This one good; not like that one hanging up. This one will float. I know. I float with it myself. See—made of the best red rubber. I blow it up. Now you watch."

From under his ragged jacket he produces what looks like a secondhand inner tube for an automobile tire, and begins to blow it up with his mouth. As the tube fills, queer lettering becomes legible on the surface of the rubber. One of our party knows the Russian alphabet well enough to spell out the manufacturer's name and place of business: Karl Marx, British Museum and Moscow. The rubber

cannot have been of very good quality, or else it was too old, for suddenly the tube blows up in the puffer's face with an appalling bang. "Damn!" he mutters. "The second time today. Every time I demonstrate, it goes bust. I take this instead." He grabs Owen's belt and dashes for the exit. We follow, at our leisure.

4. SCIENCE AND SCIENTISTS

In the Introduction I promised to state Grace's estimate of scientists and their aims. This seems to be the proper place to fulfil the promise.

We have now seen enough to suggest that invention's gift to the world was not very intelligently received. And, as will appear more clearly later, but few inventions of first rate economic importance are made today without the deliberate application of a great deal of scientific knowledge and technical skill. The like has been true for many years.

Again, glancing back, we note that a main trunk nerve of the Industrial Revolution can be traced to Galileo and his scientific successors. No amount of merely political change could have brought on that Revolution. Steam engines and the rest were spawned by science, not by oratory or declarations of independence from unpopular rulers. Once the engines began fussing and fuming, generals, admirals, politicians, economists, bankers, bishops, lawyers, stockbrokers, bondholders, and other social philosophers began doing likewise. It was at least partly due to the combined incompetence, and possibly malice, of these unscientific gentlemen that the Industrial Revolution fizzled out as it did. The legal mind alone hurled monkey wrenches enough into the machinery to wreck a dozen promising millennia.

What active part in all this was played by men of science? The question will answer itself if we look closely enough

at the following description of a true scientist and his work. The description is Grace's, and except for a few slight changes to fit rapid speech to conventional usage, is exactly as I took it down. As I have said, I do not wholly agree with her estimate.

"Science is not for the masses of mankind. It never was, and it never will be.

"The scientist comes as close to divinity as man yet has. His work represents a disinterested search for verifiable fact, undertaken in a spirit of adventure. He is handing on a legacy to the finest and rarest spirits of posterity, not to the generality of mankind; and what he hands on will go down through the generations. His legacy will never be recognized by the great bulk of men, but by his posterity, and he has been enabled to hand it on only at the sacrifice of a great many material benefits and comforts. In spite of all wars, in spite of all ~~stupidities~~, the stars will survive for posterity. The inheritors of science in any generation will be but a handful, and their work will again be as disinterested, and they themselves as noble, as were the legacy they inherited and the men from whom they received it.

"Contrasted with men of science, the religious-minded have made their appeal to the whole human race. Their "lifebelts"—their promised salutations—were mixed up with superstitions and "values," and hence could not last.

"The gift of science is permanent, and, in any age, verifiable. The impersonality of science safeguards its permanence. With each definite step forward taken by scientists, something is known that was not known before. The gain is permanently valuable to the race; it is independent of changing creeds, shifting moralities, and unstable esthetics. Conceptions of beauty change with all other values; the scientific, verifiable fact does not change.

"What verifiable facts the scientists of today inherited

from their predecessors working in Babylon over four thousand years ago, have outlasted scores of creeds and moralities that were to have endured forever. The masses who accepted what their prophets offered them, because it was the utmost they were capable of receiving, are buried with their creeds. They have had no posterity. Science is the one light that has continued to shine for thousands of years, although only a few in any generation have seen it and have found their way to such immortality as a human being may attain. Mysticism gets nowhere in the darkness.

"Is science a salvation for humanity? No. The man in the street is congenitally lazy. "Let George do it" is his motto. "George" is the scientist. The byproducts of "George's" labor, in which "George" himself is not interested, give jobs to the man in the street and keep the trough full.

"The poor and the dispossessed have a blind, vague faith in the science whose spirit they do not understand. Science is nothing to them, provided they do not go without bread.

"If pressed for an estimate of science and its social significance, the prosperous consumers of byproducts overestimate the value of their radios, their automobiles, their electric stoves, their surgical operations, their luxuries of food and drink, and prophesy that the scientist will produce a better world for them and all their kind to live in. But he won't. The scientist is not interested in them, and they are incapable of bettering themselves. They may or may not learn that their own sloth is their damnation; it is a matter of complete indifference to the scientist whether they learn that fact or not. His work is not for them; once more, it is a legacy for the few. So, for the vast masses of mankind, poverty-stricken or prosperous, science is just another lifebelt. To the extent that the masses believe science will save them, to that extent will it let them down.

"Science is the continuity of a fine and timeless companionship, not a succor for indifference and incompetence. The preservation and transmission of this companionship is what the scientist is achieving, and it is not going to get the public anywhere. No doubt most scientists would be happier in their work if the public did have some glimmer of what they are trying to do. But the fact is that the public has no such glimmer, and a fact is a fact.

"What destroyed those other lifebelts? Always the same thing: a *deliberate*, wishful attempt to help the race. Economists, politicians, and religious reformers have tried deliberately—when they tried at all—to make an immediately better world. Their message was read in the illusory signs of their own times and repeated to their contemporaries. Frequently such palliatives have temporarily seemed hopeful, at least for a few, and what was only a bubble on the water has been mistaken for a lifebelt. Invariably prophets and disciples have all sunk together.

"The scientist never holds out any lifebelts to humanity. His ideal is only the explorer's. His work is the one evidence our race possesses that existence is not meaningless. Being stuck in the middle of this mystery of life is like a magnificent nightmare: we don't know what it is all about; beauty and the rest may be illusions. Only research gives true joy because it may, as no other form of human activity can, satisfy this sense of not being at home in the universe. Do we belong here, or are we aliens in a meaningless dream? The fact that we can ask that question means something. The man of science gets no good out of science in the sense that the man in the street does. But unless the man of science is able to ask the question, life itself is not good enough."

I call that a pretty plain statement, and I repeat that I disagree with some of Grace's opinions about scientists and

their science. To underline what she believes, I supplement her main contentions. These are important not only for her case, but for that of science.

First, the general public believes that science will make this world a better place for all human beings to live in. Grace sees no prospect of such a happy issue out of all our stupidities. She asserts that the man of science, contrary to popular belief, is not concerned with the common welfare. Nor is he motivated by any humanitarian desire to help the whole race, or even any numerically considerable part of it. I believe she is right on this, and I shall go into greater detail in the proper place to back up my belief. In the meantime, if any man of science, or anyone else, feels inclined to challenge this tough creed, he may be asked to produce the evidence that scientists as a class are motivated by altruism or a desire to lighten the burdens of mankind.

Second, the byproducts of the scientists' work frequently have made life more endurable for nearly everybody, including those who hate science and all its works.

Granting for the sake of generosity that medicine and perhaps some other applied sciences are activated by a glowing zeal to alleviate the ills of society, we must admit that with the beneficial byproducts of scientific work have come several that are not so beneficial. Some of these demand inspection, and will be looked at later. Now, the general unscientific opinion seems to be that ultimately, and not so far in the future at that, the benefits of science will greatly outbalance the attendant evils. Grace is quite emphatically of the opposite opinion: "Science is not going to get the public anywhere." Many believe as she does, although they lack her candor. I permit myself the luxury of no opinion whatever on what our race may do under any

given set of circumstances. However, if the past is any indication of the future, I believe Grace is probably right.

5. "THE MYSTIC WAY"

One of Grace's most emphatic declarations will doubtless force a responsive discord in many a gentle bosom: "Mysticism gets nowhere in the darkness." A little farther on I report what many of my scientific friends have to say on the current recrudescence of mysticism which the public at large, and especially the cultured public, is now enjoying. For the moment, as it is a question of science and scientists, a little elaboration of Grace's forthright declaration of independence from mysticism is in order. I believe this is of the first importance for anyone who wishes to catch a glimpse of what the scientific mind is like. I also believe that what follows is a scientifically (that is, verifiably) exact statement of fact. It is not invalidated by pointing to a handful of reputable scientists who also, if one may credit their published writings, are mystics, like Alexis Carrel, J. H. Jeans, and A. S. Eddington.

To claim that science and mysticism are not incompatible because a very small fraction of one per cent of all reputable scientists are mystics, would be as silly as to assert that sanity and insanity are compatible because a much larger fraction of one per cent of apparently sane people will sooner or later find themselves in lunatic asylums. The "scientific mystics" were mystics before they took up science as a trade, and have remained mystics in contradiction to their science. For one such exception there are hundreds of fundamentally scientific minds, not necessarily engaged in science as their trade, that have abandoned their infantile mysticism in favor of a scientific outlook on the world.

Science is the very antithesis of mysticism. A mystic

may be inclined to credit his feeling of "one-ness with the One," or of "all-ness with the All," or his emotional "certainty" that "the Absolute" and "ultimate reality" are not nonsensical couples of words, to a supra-sensory intuition of all-ness, one-ness, the Absolute, and ultimate reality. He may even resent any attempt of scientific psychologists to trace these elusive yet comforting universals to something that can be tested, checked, and duplicated at will in a properly conditioned human body by a competent experimenter.

A wise mystic does not bother to notice any such scientific probings. Such a one declares that he *knows* he is "in tune with the Infinite," or in whatever extra-scientific state he may imagine himself to be. His declaration is, of course, incontrovertible. If "I know that my Redeemer liveth," I know it, and nothing more is to be said, except possibly by one of those exasperating skeptics who ask knowers whether they understand the meaning of the word "know." The mystic claims immediate, irrefutable knowledge of the universe, or of at least some part of it; the scientist arrogates to himself no such painless omniscience. What he knows he sweats to know, and anyone else who is willing to sweat as he has sweated will know the same thing. Mystic experience, on the other hand, is said to be a purely individual and incommunicable affair.

In passing, it may be of interest to state two current interpretations of "meaning" that have found favor with a large number of scientists and modern anti-metaphysical logicians, although by no means with all. An example of each will suffice.

What is "meant" by the statement that the sum of the angles of any plane triangle is equal to two right angles? The "meaning" of this statement is its proof, as given in a particular book on elementary geometry. Fortunately,

all the books in question, except a few written by original geniuses in search of the Absolute, are in substantial agreement in their proofs; so the meaning is unambiguous for all practical purposes. For Descartes, however, the statement about the triangle was an eternal truth. It was on the same level for him, apparently, as the existence of his God, and would have had a "meaning" whether or not anyone had ever concocted a "proof." Curiously enough, Descartes attempted to give his God a meaning in this modern sense by constructing a queer proof of his existence. This interpretation of meaning almost puts "meaning," "truth," etc., on the behavioristic plane, that is, in the mystics' Hell.

The second example refers more or less directly to what has been called the "operational" method in physical science. What is meant by saying that the temperature of the water in a certain tumbler is forty degrees Fahrenheit? Merely the operations that would have to be performed with a Fahrenheit thermometer and the tumbler of water to get a reading of forty degrees on the scale of the thermometer. Of course no human being has ever read exactly forty degrees on any thermometer, so far as any human being knows; the recorded temperature is a statistical average.

This example may seem trivial. It was chosen for its simplicity, to display the bare bones of one non-mystical interpretation of "meaning." But even in physical science we soon reach apparently meaningful questions that are, indeed, meaningless. Here is an old favorite: a tree falls in a section of the Amazon forest where no human being lives. Does the fall make any sound? Here is another, not so physical, in fact quite mystical: what does "I think, therefore I am" mean? Another: the temperature at the

centre of the largest star in the brightest spiral nebula just beyond the range of the largest telescope in existence is of the order of forty million degrees centigrade. Still another, due to the mathematician W. K. Clifford: that side of the Moon which we never see is inhabited by an enormous ape with red whiskers. Clifford put forth that startling hypothesis to reveal the impertinence of certain venerable dogmas imploring the assent of his human intelligence. Finally, a single thundering utterance that still goes on crashing down the ages: "The Unknowable." What, precisely, does that signify, on any interpretation of meaning? The scientific mind is dumb before such a tremendous riddle; the mystic *knows* what the "The Unknowable" means. Further, no true mystic is seriously perturbed by knowing that The Unknowable is directly responsible for everything that goes on in the world, from prayer-meetings to massacres. Mysticism is at least an easy way of evading troublesome questions.

Faced with a mystical interpretation of anything, a sane man of science attempts to find a way into and through the alleged mystery that *any other* sane man could follow, and following, reach the same factual conclusion. If the scientific mind admits—as it does far more readily than the mystical—that it can see no such way, it will not admit that no other scientific mind will ever find the way, say next week, or in the year 10001 A. D. Its faith in its capacity to penetrate the at-present unknown, or only partly known, to ever greater and greater depth, is perhaps but another type of mysticism. If so, it is a profitable mysticism for the welfare of the race. To take a crude example, the mystics of the Middle Ages *knew* that plagues were a direct visitation of the wrath of God; modern science has discovered that divine anger can be deflected by pro-

phylaxis. It is part of the mystical faith of scientists that no question, even of ethics or religion, is unattackable by the method of science. And they also believe that the outcome of any such attack will be beneficial to the race, even from the standpoint of the professed mystics.

I see that here I have flatly contradicted some of what Grace said—"Science is not going to get the public anywhere"—but I can't help it. What I have stated, I believe to be the fact. In spite of their professional indifference to the welfare of the race as a whole, scientists cannot help doing much for their fellowmen that even the most gelatinous of mystics could consider "good." All this, of course, is in the long run.

At the present moment, things are muddled enough to suit the taste of any unscientific lunatic. Mysticism in its crudest forms is more popular today than at any other time since the Middle Ages. Direct revelations of the ideal in government have been vouchsafed to at least three living messiahs whose converts number hundreds of millions. Perpetual motion, banished a century ago from physics, has turned up like the Prodigal Son in economics, to be welcomed with a fatherly kiss, a gold ring, new garments, and a whole hecatomb of fatted calves. The calves are only too glad to be slaughtered for the feast of forgiveness.

In less material things, also, mysticism is welcomed home with a resounding smack. Those who follow science tell us that forty or fifty years of science in the schools have made only a negligible dent in the public ignorance of what science is, what it does, and how it works. Scientifically, the great mass of the people, including the most highly cultured, are contemporaries of Thomas Aquinas. In the narrowest sense, they are still religious-minded. Witness the joy with which the crazier speculations—never the

ascertained facts—of science are acclaimed by the cultured as revelations of ultimate reality. Scientists know what these temporary hypotheses are worth and hold them lightly; the eager public swallows them whole and suffers acute mental indigestion when they go bad. A recent example is the welcome accorded “extra-sensory perception” by hundreds of thousands incapable of assessing the scientific merits, if any, of the reported investigation. While any scientifically trained mind would be willing to concede “not proven” until it had had an opportunity for further examination, the mystical, narrowly religious mind accepts the unchecked report as gospel truth because, fundamentally, it is more sympathetic to witchcraft than it is to science.

Further examples of the same sort of thing appear in the transient enthusiasms for Asiatic cults and, less frequently, for the alleged intuitive wisdom of the strong, silent, phlegmatic American Indians. Have these allegedly mysterious peoples something that we have not, something that might solve all our problems for us? The mystic asserts that they have; the scientist will investigate the matter—when he finds the time. For the present, he will continue his researches on the effects of an excess of carbon dioxide in the lungs, or of alcohol in the blood. The ductless glands also are claiming much of his attention. For this he is called “an average sensual man” by futile and frustrated mystics who believe that all the riddles of existence can be solved by taking a deep breath and holding it till the chairs and tables begin to go round like all the hosts of Heaven. “The average sensual man,” by the way, has been adopted from the French by superior beings as the ultimate in opprobrious epithets to be hurled at all those who must live in the Twentieth Century rather than the Thirteenth. It is a serviceable enough tag, invented in

the first place (I believe) by Molière. If only those paragons of culture who use it to excess could think of something less shopworn, life would be less of a bore than our admittedly superior friends make it.

Leaving mysticism for the present (we must return to it later, worse luck), we shall glance next at a few of the things science has done for us, and is still doing.

Chapter IX

PROFITS AND LOSSES

Did He who made the lamb make thee?—BLAKE.

I. UNEARNED INCREMENT

To ENCOURAGE thrift and the bankers, youngsters in the grade schools are taught the Malthusian magic of compound interest. Put a dollar in the bank and forget about it—you might as well, in these parlous times. If the bank pays $4\frac{1}{2}$ per cent interest, compounded annually, how much will it owe you at the end of fifty years, when you begin to feel like retiring? The interest tables tell you. This is not enough to support you in your old age, as the teacher finally convinces you. When your fond parents have passed on, your expenditures will be considerably more than the daily nickel for an ice-cream cone. So you listen to reason and resolve to put by a hundred dollars every year of your life for fifty years. The annuity tables encourage you to believe that the bank will hand over \$17,850 at the end of your saving spell. This is a little better.

But consider the really spectacular instance of the near-sighted redskins and the farsighted Dutchmen that Teacher always springs on the helpless youngsters to scare a little thrift into their feckless souls. The Dutch traders in 1626 gave the gullible Indians \$24 for the whole of Manhattan Island on which the richest part of New York City now

stands. "A swindling outrage!" shouts some indignant champion of "the rights of the natives," thinking only of what all those imposing skyscrapers and the rest are worth today. But generous theory is wrong as usual. If those thrifty Indians had banked the \$24 getting only 10% compounded only annually, the bank would now owe them \$179,200,800,000,000, and the Indians would be poorer than ever.

Not all the banks that ever did business in historic times have handled that much money, even on paper. The only adequate measuring stick for such a colossal sum is the national debt, say one hundred billions to anticipate a bit, and even with this impressive footrule it would require about 180 Depressions to step off what New York owes the Indians. At the rate of one Depression costing one hundred billions once every ten years, it would take 1800 years to catch up with that compounded indebtedness to the redskins. But note here a very important—and intentional—slip in the arithmetic.

That debt would never be paid off at any such rate. For, as the Indians received their decennial installments of a hundred billion each time, they would put all but a billion or two back into the bank to breed on itself—at compound interest. Moreover, what was not paid off by the bank would still be in it, breeding away 365 days of the year.

All this presupposes that the Indians have remained as virginal financially as they were when the Dutch caught them in a state of nature. This assumption is contrary to human nature, as anyone acquainted with Indians owning oil wells will agree. Lo, the poor Indian, would be investing his unearned increment in all manner of business enterprises earning anything from ten to a thousand per cent on the initial investment. And he would be doing this con-

stantly. Wall Street would be scalped, and all the banks tomahawked. Give poor Lo half a chance at modern business methods, and his "untutored mind" can make the proudest eagle of the oil fields look like a moulting buzzard.

Compound interest of this scalping, tomahawking variety has created our present civilization and now threatens to put it through bankruptcy. Faster and more relentlessly than money ever bred upon itself, science breeds upon itself, and at *an ever accelerating rate* of compound interest. Discovery begets discovery, not one discovery at a time, but two, or three, or even dozens.

Frequently the discoverer himself is astonished at what he finds. He was not looking for what his research puts into his hand, and he stands staring in bewilderment, sometimes tinged with fear, at the sinister thing that research has forced on him. The increment of factual knowledge has been unearned.

Of course, if he had not been looking for *something*, he would have found nothing. But neither he nor anyone else can retrace the subconscious path that led to his discovery. There it is, the germ of a revolution in industry or war, and the Devil only knows where it came from. And before he has begun to realize the implications of his discovery, hundreds of assiduous workers in every civilized country of the world are turning it this way and that, and pulling it to pieces to find what it may conceal in its benevolent heart and its malevolent head. Like the original discoverer, many of them surprise themselves and become new foci of discovery. Facts breed in the medium of scientific research like colonies of bacteria in a putrefying broth.

As was emphasized in connection with Galileo, science asks definite questions of nature and gets definite answers that other questioners can verify. The answer, however, but

seldom reveals its whole significance at once. Often the better part of a century passes before the returns from some recondite research begin to mount appreciably; but when the increase does become noticeable to the casual observer, it is already expanding like a thundercloud. Any worker in science could recall dozens of such instances off-hand. One will suffice here, and I shall recall that one which perhaps is freshest in the minds of newspaper readers at the present time. This instance has more than ephemeral interest; it is in fact one of the classics of discovery in the physical sciences.

Marconi was buried in late July, 1937. The Associated Press dispatches giving an account of his life and work were remarkably full, accurate, and just—just both to Marconi and to his indispensable predecessors in the invention of wireless. Enough of the story was given to enable even a scientific outsider to appreciate the facts and their social significance. The last is of particular importance here, as will be seen when we come to the end of our short summary of the facts. Marconi's invention is a perfect and complete example of the pattern of scientific discovery and its applications, both constructive and destructive, to human society.

Not to go too far back in scientific history, we may summarize the essential steps only from about 1820 to the present. Michael Faraday (English, 1791-1867) was then engaged on his electrical researches, which hundreds of inventors and scientists were to develop into the innumerable practical applications that transformed the age of steam to our present age of steam and electricity.

About 1821 Faraday invented the first dynamo, the ancestor of all those operating today. It was a puny little affair, hardly a respectable mechanical (or electrical) toy. No

youngster of eight would accept it today as a birthday present. Nor, when it was first invented, would that great liberal statesman and illiberal hater of evolution, William Ewart Gladstone. "What is it good for?" the humanistically-educated Gladstone asked Faraday when he was shown the infant ancestor of the electrical industry. "Some day you may be able to tax it," Faraday replied, knowing exactly what he was saying and meaning every word of it. There was not a grain of sarcasm or irony in Faraday's simple, gentle, "truly religious" soul. Gladstone turned his back on the toy and walked away.

Faraday's interest in electricity was that of the "pure" scientist. He was interested in finding out the facts, not in making money out of facts, which is the most important distinction between the "pure" scientist and the "applied." We shall return to this later. About 1840 Faraday summed up his electrical researches in a characteristically modest statement:

"A few years ago magnetism was to us an occult power, affecting only a few bodies. Now it is found to influence all bodies, and to possess the most intimate relations with electricity, light, crystallization, and through it with the forces concerned in cohesion. And we may in the present state of things well feel urged to continue in our labours, encouraged by the hope of bringing it into a bond of union with gravity itself."

As to the last, we are still hoping; the successively discarded "unified field theories" of Einstein and others are the tombstones of our hopes. But science ferments so furiously today that nightfall may see the hoped-for solution.

About twenty years (1863) after Faraday reported as above, another "pure" scientist, the Scotch James Clerk-Maxwell, produced the broad outlines of his mathematical

theory—note the word “theory”—of the electromagnetic field and his theory (again!) of the electromagnetic nature of light. Maxwell was a most powerful mathematician, also a man of extraordinarily penetrating scientific vision. Faraday had no mathematics beyond simple arithmetic; he was out-and-out an experimental genius of the first rank. Acknowledging his indebtedness to Faraday’s experimental researches, which had supplied the necessary factual foundation for his mathematical theory, Maxwell proceeded to replace experimental facts by subtle mathematical pictures of them. Masses of facts were abstracted and systematized in a few (actually eight) mathematical equations. These equations were amenable to mathematical discipline. In Maxwell’s expert hands they disclosed their well-concealed secret: electromagnetic disturbances “should be” propagated as waves. That is, wireless waves “should” exist. But did they? Rousseau would have immediately answered “Yes.” So would Adam Smith.

Maxwell was not looking for wireless waves when the possibility of their existence fell into his hands. His scientific successor, the German Heinrich Hertz (1857-1894), directly inspired by Maxwell’s theory, set out deliberately to find whether the wireless waves predicted by the equations existed as scientific facts. In 1887 he succeeded in producing the waves in his laboratory. They had the physical properties predicted by the equations.

Like Faraday and Maxwell, Hertz also was a “pure” scientist. Faraday was not of the tribe of professors; the other two were. The last outstanding character in the play was the Italian Guglielmo Marconi (1874-1937), a man of independent means with a shrewd practical business sense. Faraday’s way was paid by the Royal Institution of London; Maxwell’s partly by his private estate and partly by Cam-

bridge University, subsidized by the Duke of Devonshire; Hertz' by the Imperial German Government through its Ministry of Education; Marconi's by his mother and, later, himself. One social fact in this record should be obvious, even to those who do not wish to see it. No one class, privileged or underprivileged, has done all the scientific work. Faraday was the penniless son of a poor blacksmith; Maxwell, the son of a prosperous Scottish laird; Hertz, German middle class; Marconi, Irish-Italian upper class.

After Hertz demonstrated the existence of the waves, a whole swarm of theoretical and experimental physicists descended on the feast. Hungry inventors also appeared. All of them together practically cleaned up the main job. In this last attack "pure" and "applied" scientists participated about equally.

There remained only the climax, to make the thing work in a practical way—to take it out of the laboratories and apply it to daily life at a reasonable cost. This last step was taken by young Marconi about the year 1896. Socially, it was the most important of all. Scientifically, it was of only minor interest compared to the steps which had gone before and made it possible. The practical applications of wireless have raised innumerable questions of both social and scientific interest. The latter are of no further interest to us here; the former are.

2. IS IT A DREAM?

The Associated Press report of Marconi's career was full, accurate, and in the scientific spirit. The account I read was probably what appeared in every first-class newspaper in the United States. In the same paper that I read there appeared, on the editorial page, an extremely able and scathing attack, by the editor, on a recent government report

by experts in several of the sciences, engineering, and economics. The purpose of the report was to acquaint the officers of the government with the available resources of the country, to estimate the probable effect of scientific development of these resources, and to forecast as conservatively as is humanly possible the probable effect on industry, and the social structure generally, of certain new scientific developments that will most probably become of great economic importance in the near future. I hasten to add that this blistering, scathing attack was printed in a paper other than the one I usually read, as I am away from home.

Now why should any editor go berserk over a coldly impartial government report on what, after all, is a scientific matter? The main business of the report was to get at facts. But facts nowadays are of growing economic importance. Everything, I think, is explained, except the miracle that facts and economics are at last getting together, if only to blacken one another's eyes.

The non-abusive part of the editorial was a magnificently reasoned plea that all scientific research likely ever to be of commercial value be turned over to the great industrial corporations as *their* job. Further, if some scientific discovery made in a university laboratory, or in a private study, should show signs of becoming economically important, it also should be turned over immediately to the same corporations for investigation and possible development. In support of this modest proposal, the extremely able writer of the editorial offered a whole battery of reasons. A sample will suffice here.

The corporations mentioned maintain splendidly equipped research laboratories manned by high-grade, scientifically trained specialists. This is a fact.

If such laboratories do not take over the development of

economically valuable discoveries, some department of the federal government may, as the expense of bringing an important discovery or invention to the commercially profitable stage sometimes runs into the millions of dollars. Two or three hundred thousand dollars is spent quite often to perfect major inventions.

Now, according to the editor, "the inefficiency of the government is notorious." It must be, since so many people say it is, without adducing facts and figures to back their assertion. To supply this lack, I recall one such fact.

When the government wanted some advice on proposed banking legislation, it called in one of the acknowledged "biggest" bankers in the country. Was that evidence of inefficiency? About eight thousand banks at the time had closed their doors. They were broke, temporarily. Who should be able to advise competently in such a dangerous crisis? Obviously the man who had put one of the greatest banks in the country on the rocks and all its depositors on the dole. Who should know more about the mysteries of closing bank doors than he? Nobody. So they called him in. Was that inefficiency?

There are two opinions. If the desired object was to close more doors and throw more people on the dole, then it was the acme of efficiency. But if the government wanted to find out how to open bank doors, then it was a very inefficient way of trying to find out. If at any time you are in need of an opinion to start a fight, you may use whichever one of these two makes your opponent see reddest.

As I have no idea what the intention of the government was, I cannot say whether the government is "inefficient," although it is obvious that it is "notoriously inefficient." That word "notoriously" removes the editor's statement from the realm of fact to that of politics, and again he is telling the truth.

It is his next reason in support of his modest proposal that is of interest to us here. He asserts that all the inventions and scientific discoveries of practical importance have been made in the laboratories of the great industrial corporations. That is why I recalled all that familiar history in connection with Marconi and wireless. As I have said, the editor is an able man. He is also an extremely well educated man, and an intelligent man. He knows all the salient facts in the history of wireless. There are many as able, as intelligent, and as well informed as he, who write brilliantly reasoned books and articles whose modest proposals are all strangely identical with his. If you are interested, you can get some of the best of this literature for a postcard that will not cost you even a one-cent stamp. Postage-prepaid reply-postcards are mailed to hundreds of thousands of addresses every month. There are more ways of getting your name on what is technically called a "sucker-list" than are dreamed of in your philosophy. Now those intelligent, able men are not fools. That is obvious. What would you call them? My own preference is "lifebelt manufacturers." They are going to save us from drowning if they have to scuttle the ship to do it.

From this bit of current history, we learn one fact that was not recognized as fact in this country till 1917 when we began saving the world for democracy. It was quite suddenly realized then that scientific research is of capital economic and social importance. Since 1917 that sudden realization has bred upon itself at compound interest. Whoever controls and directs scientific research will control and direct society, and may put it on the rocks.

Able and intelligent men believe this. Their belief is based on cool-headed observations in the best scientific tradition. Statesmen, if we may judge by their antics, still

believe in logic and reason, the faith of their fathers in the Middle Ages. They appear to be about as successful in their debates as a metaphysician would be in arguing against a machine gun.

The typical history of wireless illustrates two further aspects of scientific invention. Scientific invention is often humane. When the *Titanic* struck an iceberg on her maiden voyage in 1912, and sank with great but not total loss of life, Marconi happened to be in New York, where the rescued were brought. They marched in a body to his hotel and told him they owed their lives to him. They were probably right. Had not the rescue-ships been summoned by wireless, all the rescued would most probably have perished. That spectacular rescue is responsible for the wireless on all civilized passenger and freight vessels today. It is interesting to note in passing that quite a brisk little battle was fought before the law won and compelled the installation of wireless on such vessels. A wireless outfit costs money and its operator has to be paid wages.

The other aspect is the frequent inhumanity that follows great advances in applied science. It is a matter of complete indifference to science whether it saves human lives or destroys them. Both submarine and aerial torpedoes directed and controlled entirely by wireless have been invented and are rapidly being perfected. If you happen to be aboard ship when one of these unerring scientific messenger boys tenders you whatever he has been sent with, you had better reach for a lifebelt. If you are on the crowded sidewalk of a congested city, open your umbrella and raise it in your right hand over your head. The last, in untechnical language, is equivalent to the "What to do during an air-raid" instructions issued by European Committees on Civilian Defense. Is it unreasonable to assume that what will stop a bomb arriving under

the force of gravity will stop a torpedo arriving under its own power? But what would you do if the sly torpedo sneaked up behind you in the dark, or stole in at your bedroom window just as you were saying your prayers? You would probably jump and say "damn!"

As to those two aspects of wireless, Marconi clearly foresaw and predicted the life-saving possibilities very early in his inventive career. Of the men behind him, possibly Hertz may have had a hazy idea that some day wireless would be a blessing to humanity. If he had, he refrained from prophecy, like the good scientist he was. Farther back than Hertz, it is certain that neither Faraday nor Maxwell ever dreamed in his wildest nightmare what was to come of his researches in pure science. Nor did Marconi foresee the destructive possibilities until well along in his career. Both the life-preserving and the life-destroying potentialities of wireless belong to the unearned increment of well invested scientific thought. Both were unpredictable to ordinary mortals. And men of science are such. They foresee no more clearly than the rest of us what interest will have accumulated a generation hence from their half-forgotten capital of experiments.

Under the constant impact of scientific invention, society is like one of the earlier investigators of X-rays—or like any of the present technicians who ignore the precautions now known through tragic experience to be necessary. Everything goes well for five years, or even ten, after a careless worker has abandoned X-ray work entirely. Then one day when he has almost forgotten that he ever worked for months near an unscreened tube, he begins to burn slowly to death, and he remembers.

Why did he not take the simple precautions that he knew to be necessary? Because he was a human being like the

rest of us. Society is composed wholly of human beings who know better but who do nothing about it. What would be the point in throwing such a stupid aggregation of individual stupids a reliable lifebelt if we had one?

The invention of wireless illustrates also a sharp cleavage between the era of purely mechanical invention, that shot the Industrial Revolution up to its first major peak, and our own age. The break is first clearly discernible in the 1850's-1860's, and is marked by the first successful trans-Atlantic telegraph cable. All the abstract "pure" science of electromagnetism then available was *consciously* directed to the solution of a practical commercial problem. And more than that: new science, much of it highly abstract, had to be created before the problem could be solved. The solution was largely the work of a single man, Lord Kelvin (1824-1907), then plain Professor William Thomson of the University of Glasgow, who combined in one head and one pair of hands the high qualifications of a first-rate applied mathematician, an outstanding experimental and theoretical physicist, and a great engineer. Today such a problem would be split into several and farmed out to a corps. Incidentally, this is the Kelvin whose fundamental researches in the theory of heat are commemorated in the trade-name "Kelvinator." The point to be noted particularly is that Kelvin *consciously* applied what in his day was unpractical *pure science* to the solution of his *practical* problem in *invention*.

Major industrial inventions are but seldom made now by tinkering with a teakettle, as Watt is said to have done. They demand the deliberate application of vast and intricate masses of scientific facts by highly trained armies of investigators, often working in widely separated countries. Television is a case in point. The exceptions, as in the Wright brothers' solution of the age-old problem of human

flight, are brilliant and spectacular, as are all miracles of unpredictable genius, but they are off to one side of the main, purposeful, brute-force attack. Eventually, however, one of these totally unexpected flank attacks may change the entire aspect of a major battle.

The hit-or-miss, cut-and-try-again of the early Nineteenth Century invention is a thing of the past. An industrial research laboratory is distinguishable from a professor's only by its more businesslike neatness. The object of the first is primarily to increase dividends; of the second, to increase knowledge. The professor donates his discoveries to the world in exchange for a more or less adequate living, and is not greatly troubled if others make millions out of what he has found. The corporation financing the industrial research laboratory publishes freely what is of no ascertainable commercial value, patents so much of the rest as is patentable, and locks the remainder up in its safe for the exclusive use and profit of itself. Business is business, and scientific discovery is sometimes the best and most businesslike business of all business.

Today science and factual economics are so closely wedded that not even a full session of the Supreme Court could divorce them. This is one of the facts that will have to be taken account of by whoever essays to estimate the reliability of science as a lifebelt for our sinking race.

We saw what issued from the polyandrous union of young Industry and Jean Jacques Rousseau's three promising boys, Liberty, Equality, and Fraternity. When this precious trio finally ran away and left her with all their children to take care of, Industry decided to make an honest woman of herself, and she openly married Mechanical Invention, with whom she has been cohabiting—to put it as delicately as possible—for some time. By poor blundering, inefficient

Mechanical Invention she kept on having more and more children.

Having happily buried her plodding first lawful husband, Industry has taken unto herself a vigorous young man, sound of head and wind, and one hundred per cent efficient. She will have a hard time wearing him out as she wore out that poor old tinker she planted the other day, with a teakettle at his head and coal-scuttle at his feet. Even now she is having a struggle to keep her brand-new husband at home of nights. He is always going off on "business" trips, but on what sort of business she can't for the life of her find out. Nor can her private detectives. Gossips are already whispering behind her broad back that "Number Two" will shortly plant her, with a torpedo on her toes and a gasmask on her nose. Then the young widower will marry the girl he really loves, and stay at home after dinner. "Tis but a dream."

3. INQUISITIVE MONKEYS

I had just started some arithmetic on the compound interest of Galileo's modest investment, when I dozed off in a short cat-nap and had one of the most frightful nightmares of my nightmarish life. The arithmetic undoubtedly brought on both the nap and the nightmare.

Galileo died in 1642; say 300 years ago. The four years' extra credit will make only an inappreciable difference in our balance. Probably all the pulleys, bits of string, nails, old boards, glass, and other odds and ends Galileo used in his experiments, including those famous shot which he dropped on Aristotle's bald pate from the Leaning Tower of Pisa, cost him not over a hundred dollars in our money. In 300 years \$100 compounded annually at 10 per cent will amount to \$261,710,000,000,000. Here again it is the story of the redskins and the Dutch, but with a new element of usury.

All who have taken shares in Galileo's company since his death have reinvested their earnings with the company, *and the number of investors has increased continually at an ever-accelerated rate.* The computation of what Galileo's \$100 now amounts to for the benefit and the distress of society is beyond human arithmetic. So I did not try to compute it.

So far, I was still wide awake, and remained so till the awful moment when I looked up and saw 666, the Number of the Beast, staring me in the face. Until that moment I relaxed, trying to recall the curious opinions and more curious speculations of many of my scientific friends. These men come from every civilized country in the world, and all of them are actively engaged in scientific research. Once in a while, when they have had a Scotch and soda, they also relax, and in their uninhibited condition spill what they really think of science, of themselves, and of what they and science are doing for the human race. After they have had about eight sodas, they begin to expand and to "dip into the future, far as human eye can see." I wish I could dip into Scotch and soda the way those men can. Then I too might see visions and dream dreams, and stop having those hellish nightmares. But black coffee is my limit.

Here is what they tell me after the first glass. If a man of science professes to be working "for the good of humanity," he is either a very rare freak of nature or an out-and-out charlatan and not a man of science at all. Always excepting that rare freak, any man of science who tells himself, "I am impelled to do this piece of research by my love of humanity and my conscious impulse to benefit the race," is lying to himself. So also is the man who says, "I am going into science as my life-work in order that I may do something for the good of humanity."

Men who lie to themselves like that make very mediocre

scientists. Occasionally a competent man may lie himself into believing untruths of this sort for a month or two, but facts soon jolt him out of his pleasant daydream. Looking back on it, he asks himself, "Was it so pleasant after all? What sort of man is it who is always proclaiming his love for humanity, and shouting that he is sacrificing his life for the good of his fellow men?" For the moment he cannot recall. Then suddenly he remembers the Middle Ages. That makes him think of Mexico's thirteen million peons. He decides to lie to himself no more. He is in science because he likes to do research and because he is competent enough at his job to earn his living by doing the kind of work he would rather do than any other. Humanity does not enter into the picture at all. His ethics are those of an inquisitive monkey who has filched an expensive gold watch and is doing his destructive best to find out what makes it tick.

The man of science presses his ear to nature's bosom and tries to discover what her heart-beats portend. If there is too much tissue between his ear and her heart, he resorts to vivisection. The result of his callous labors may be a new infernal machine, or great discovery in the therapy of cancer. The second may possibly save the lives of one-fiftieth as many human beings as the first destroys. Whichever one he finds, he, as a man of science, is equally well satisfied with either. Knowledge has been increased, and his instinctive or acquired greed for knowledge has been temporarily appeased.

Now this, to many sensitive people, is a very sad state of affairs. Even some of the scientists themselves say it is deplorable—and do nothing to remedy it, if it is to be deplored. The last is not quite fair: they do rationalize away some of the charges against them which sensitive people find most shocking. If poison gas for use in warfare came out of

chemistry, so did anaesthetics. If a religion which comforted a great many people was undermined by advancing knowledge, many more people believe that science provided firmer foundations for what they think was worth retaining in the old religion. And so on, all down the list, from medicine to metaphysics. But these rationalizations are only rationalizations. They come after the fact, not before. They provide no motive.

Does nobody "do" anything about this allegedly deplorable recklessness of scientific men? Yes; a great many people do. And, curiously enough, these active people are for the most part capitalists, whom our friends across the ocean hate so enthusiastically. As what follows immediately will probably drive our friends into a perfect frenzy of vituperation, I shall ward off the worst of it by taking the words right out of their own mouths: "Benevolence is only another form of selfishness." Old Jeremy Bentham said that long ago—of himself. Jeremy knew how to twist the meanings of words till their eyes bulged out of their tails and their hind feet flapped helplessly from their mouths. His much-quoted aphorism is merely profound nonsense that seems to mean a lot but actually means nothing.

Well, some of the millionaires have been benevolent. This is a plain fact that cannot be argued away, no matter how profusely you froth at the mouth. Their technique of benevolence has been remarkably intelligent, considering that they are of our human species, especially in the encouragement of research in medicine and public health. Although the researcher himself most probably does not give a conscious thought to the social consequences of his work, he can be made quite simply to work for the "good" of society. It is necessary only to find the researcher whose own interests happen to coincide with those of society and

to make it economically possible for him to follow his own bent. This differs from Adam Smith's *laissez faire*. It is not anarchic selfishness; it is directed selfishness, and the conscious direction is what makes all the difference to society. To bring the right man and the worth-while job together demands intelligence of a high order, and it has been done in medicine and public health. Who did it? The scientists?

At this point I hear a terrific roar from the left. It is not the nightmare yet, but it might well have been, had I not been wide awake. It begins with a sort of chittering, as of innumerable bats gritting their sandy teeth. "All that benevolence was poured out to make the workers healthier so that they might sweat more money for the capitalists." Yes, Jeremy, we hear you, chattering away there with your fleshless jaws. "If the 'workers' dictate to society," a raucous shout interrupts, "they will show you what real benevolence is; for they will be helping themselves when they help science. The bourgeois ideology is fraudulent because it dichotomizes one selfishness into two; the proletarian dialectic synthetizes all selfishness into one. Therefore there is no antithesis."

The logic sounds all right, and is probably irrefutable. In the past, it has proved extremely difficult to finance scientific research by popular subscription or even, in the United States, by government subsidy. The one outstanding exception to the first was the \$100,000 subscribed by the women of the United States to purchase a gram of radium (about a thimbleful) for Madame Curie. However, it is not utterly impossible that things will be rosier when they all turn red—if red is to be the fashionable color when the last antithesis has been reasoned out of society by the dialecticians.

It must have been those three Russians who flew over

the North Pole the other day, to land in a California cow pasture, that finally precipitated the nightmare. What an achievement! It was typical of the compound-interest-rate-of-increase of technological progress due to the conscious application of science to invention.

The first circumnavigation of the globe by sailing vessels took years; steam cut the time to months, then to weeks; the airplane has reduced it to days, and presently it will be hours.

Near where I am staying, and only about half an hour's flight for a modern bomber from where those three Russians landed, is a large naval base. The three were messengers of goodwill, for which we are duly grateful, and which we hope to reciprocate, when we learn to fly well enough to keep above the water and not under it. At this time of year a delightful early "high fog" blankets the ocean where the battleships sway at anchor in the harbor.

By ten o'clock the fog is gone, and the sun paints all the greens, blues, and purples that the artists have not yet imagined on the flashing water. All is peace on land and sea, and even the battleships are not unbeautiful as they sway gently on the outgoing tide. For they too appear to be going out with the tide of time and the progress of scientific invention. Not all the oratory of all the statesmen and "limitation of naval armament" conferences in the world can blow back that ebbing tide much longer.

Some foggy morning half a dozen swift and silent birds—science will yet find a way of cutting out the hum of the propellers—will slip in under the ceiling, lay their eggs, and dart swiftly away again to their summer roost at the South Pole or their winter perch on some blue island at the Equator. They will have accomplished much, but they will not have ended the debate between the "Big Navy" men and

the Devil. The Big Navy men will be down below proving to Davy Jones by means of mathematical diagrams that bombs dropped from the air can not hit battleships. And then what will all the pretty little "Junior Leaguers" do for presentable husbands, with all those fine young officers and gentlemen at the bottom of the ocean? They cannot very well go down after them.

4. PATHETIC BABOONS

After four sodas my scientific friends become somewhat pessimistic, but cheer up amazingly between the sixth and eighth. If there were time, I should follow them clear through from two to eight. They have so many interesting things to say on science as a lifebelt. But time forbids, and I shall give only a small sample of what they say between five and eight.

The striking internationalism of science may be either good material or bad for a prospective lifebelt. Few who are not in the game realize how broad and swift this internationalism is. Within a month or two of the discovery of any interesting detail, the new fact is known, and impartially scrutinized, by experts in every civilized country of the world. If the detail is of some significance, as many as a thousand men of all nationalities will hear and understand it within six weeks. Language is no bar, as every serious worker in science must have a reading knowledge of the major languages in which his fellow workers publish their findings.

In the case of really promising experiments, cabled hints may start others off within hours instead of days in attempts to duplicate and check the results.

All this belongs to our "Moscow to San Diego in 62 hours by plane" speed, rather than to the "horse and buggy" time

which still trickles sluggishly through the clocks in parliaments and congresses. Its "good" is obvious: professionally, the scientific fraternity is one loosely coördinated union. Only commercial and military secrets are withheld from universal circulation, and few if any of these are likely to be of scientific importance. Its possible "evil" is that jealous politicians and fanatical patriots insist that everybody, like themselves, should hate "those damned foreigners," and they decree that all who do not so hate are dangerous radicals. Being a dangerous radical these days is a very dangerous business indeed.

This internationalism tends to spread tolerance and to make it easier for one country to see whatever "good" there may be in the work of the damned foreigners, also what potential "evil." Thus it hastens the adoption of more efficient ways of doing old jobs, for example farming. It also makes a certain nucleus of intelligent men in every country more reluctant about rushing into war than they might otherwise be. For if anyone should know it, an active scientist should know vividly that those damned foreigners are not all damned fools. The foreigners can match our gases and the rest; there is no undiscoverable "secret" about any of this poisonous hell, or about any other mysterious "military secret." Our possible enemies know as much about all this stuff as we know.

This brings us to one of the gaping holes in the lifebelt. So much has been said and written about the application of science to warfare that little need be said here. Science has had no better success than religion had, and has, in trying to banish war. Just as religion has been invoked either to stop war or to start it—for the "right" cause, of course—so has science been invoked. Science has also been made to furnish a blanket endorsement of war by abstruse military

misapplications of the Darwinian slogan, "The survival of the fittest." The Germans excel at this sort of "science." Again, a large sector of the human race actually believed once that "government of the people, by the people," instead of by one despot or an oligarchy, would end war. This proposed remedy was bound to be as ineffective as the sweetness and light that is not in the majority of us, any more than it is in any governing minority. All that sort of thing has had its day in court. Its case was thrown out once and for all in 1914-8.

Now, how is it seriously proposed that science step in and put an end to war? Simply by making war so hideously destructive to life and property, and so dangerous for the "aggressor"—there never is one—that not even the stupidest fool on earth would think of resorting to the "arbitrament of war" to settle a dispute. Beautifully logical, isn't it? This remedy seems to have been proposed for the first time shortly after the invention of gunpowder. It was promptly buried. It was revived when the modern rifle was adopted. It was raised from the dead a second time when the machine gun became popular. Its third resurrection followed the introduction of poison gas and the wholesale mechanization of modern armies. Its fourth will occur shortly after the first considerable exhibition of bacterial warfare.

Instead of admitting the alleged horror of any of these successive improvements in the art of war, the military mind propagandizes as follows. Death or mutilation by a rifle bullet is more merciful than the same by a musket shot; for the same reason a machine gun is superior to a rifle or artillery, gas to a machine gun or artillery, and bacteria to all of them. You can actually hear it stated as a fact that death by mustard gas is pleasant. Besides, we now have those wonderful new masks, and they are even making

them for the domestic animals. Why bother with them at all if we just laugh ourselves silly unto death when we get a good two lungs'-full of mustard gas?

Science has nothing to say in reply, except to express its admiration for the training the military mind must receive. Starting out full of juice and fat, the military mind is so thoroughly "tried" by discipline, imposed in the first instance by sergeants without wits enough to clean out a stable properly, that all the fat and juice is tried out, like grease from a sausage, and the finished "mind" is as crisp and dry as a cinder. It is incapable of even the most ludicrous parody of intelligence. The post-mortems on the military (and many naval) reputations of our great modern soldiers (and sailors) have shown that they were indeed well educated in their profession, but that they were educated blockheads, incapable of doing a competent job at their own work.

The question confronting science, which it cannot answer, is this. How is it possible for blockheads, as nearly perfect as the military (and naval) blockheads are, to order and compel science to do their stupid bidding? Precisely the same question is asked concerning the lunatic statesmen.

These latter getters of their own way are by no means blockheads; the versatility of their stupidity puts them well up in the virtuoso class. And it may also be asked concerning the small minorities of thugs in vari-colored shirts who enforce their moronic will on vast populations that wish to be decent.

Can the answer possibly be that science is a greater blockhead than all of those military, naval, and political blockheads lumped together and hydraulically compressed into one massive Block of unscratchable stupidity? It is at least a working hypothesis.

Apprehension about the potential social dangers of science

is at least 400 years old. In 1537 a very skillful mathematician, Nicolas Tartaglia (Italian), computed some tables on gunnery, and published them, together with imaginary dialogues between himself and a certain "Duke." The Duke cannot see any practical use for the tables.

The Duke: What is the good of this?

Tartaglia: The knowledge of this will be a secret.

The Duke: But if the man with the table shows another how to shoot, that other will learn the secret.

Tartaglia: No. The other man is like the servant of the druggist who continually compounds prescriptions as directed by the physicians, but does not thereby become a physician.

Tartaglia should have lived till 1937 to see how right the Duke was.

The error of science is that it has taught all manner of witless gentlemen, with just sense enough to point the gun away from their own empty heads, how to shoot more or less straight. It has also relieved them of the necessity for even the most trivial brains: all the dangerous formulas have been put on machines that an imbecile can manipulate by twiddling a dial. And how the statesmen and militarists do love to twiddle! With their ears to their cabinets, they twiddle and twiddle, listening for the expected shrieks and moans evoked by their bungling fingers.

By this time my scientific friends have emptied their sixth glass, and I pour out good stiff jolts for the seventh. I want to see them mellowed and cheerful before they leave. One has already started praising the baboons. I can go all the way with him on that, for I too became a baboon enthusiast after seeing that wonderful motion picture by the Martin Johnsons on the domestic life of the baboons. Probably you have seen it too. If not, take the first opportunity you get to become acquainted with those appealing

creatures, the baboons. They are almost pathetically like us in some ways, but that is not their fault.

In one of those revealing sequences, the patriarch of the clan has purloined Osa Johnson's hand mirror. There he sits, researching patiently, industriously, to discover the apparent fact that always eludes him when he tries to surprise it by any of the ruses that would occur to a good scientist. His perseverance is infinite, and his humility in the presence of the Unknowable almost as great. He is looking at his own image and doesn't know it. How could such a sad-eyed, snout-nosed, dog-faced son of sorrow get into the same world as a baboon of science? He begins to doubt the wisdom of an all-wise Baboon in turning such a monstrosity loose in the world. The thing ought to be in a cage, like those other outlandish animals the two strange white baboons minister to daily.

His doubts grow more acute: "Did he who manufactured thee make me?" No; it is impossible. Then a ghastly parody of the truth stares at him from the mystic space behind the mirror. He too is in a cage, and that ugly beast he can never quite touch is his own soul trying to get in beside him, possibly even completely inside him. With a shrill cry he drops the mirror and splashes in great leaps across the river to seek comfort in the arms of his beloved wife. The last scene, by the way, is not shown to everybody, so don't be disappointed if you miss it.

Now, what has science to say about the soul? Until quite recently, very little indeed. But my scientific friends amaze me with their wealth of information as they start joyfully on their eighth and last soda for tonight.

I am well aware that our inspection thus far has been materialistic, even grossly so at times. That is not because I have a personal bias toward materialism or any other creed.

The choice of the specimens we have examined has been dictated wholly by popular taste in lifebelts. If people prefer a belt of a certain kind, that is their privilege, and I am no salesman to try to force any other brand on them against their will. Nor is it possible for me or anyone else to change the past, and make some society that drowned itself centuries ago in its own stupidity try a different belt. I have reported what some of them fancied, and that is all. But in this new turn our inspection has taken, I have come upon a fact or two that would surprise any professed "materialist"—that word being used in the meaning which our best people consider the worst.

The first surprise that my scientific friends spring is this: many onlookers believe that science will not survive more than two or three centuries longer as a humanly profitable approach to life. By that time they expect the major features of the physical universe will have been thoroughly explored. They also believe that three centuries will give us a sufficiently complete understanding and mastery of our own extremely complicated bodies. What remains? Well, what does remain? Figure it out for yourself. If these onlookers are right, we need bother no longer about the reliability of science as a lifebelt for our sinking race. Science will probably sink first.

What is to come after science? Only a man with eight tall Scotch and sodas under his belt would dare to repeat the onlookers' prophecy, that is, if he were a man of science as my mellowed friends are. That prophecy is fairly explicit. Science will be succeeded by a more intuitive method, one which will make our elaborate experimental torturing of nature to learn the simplest facts seem trivially unnecessary. We shall look upon the face of nature and know her. We shall also look upon one another and know our-

selves. Only a mystic could express this properly and there are plenty of scientific mystics who do express it properly.

The mathematical phrasing of this embryonic creed, already mentioned in connection with Galileo, will be found in the writings of one school of mathematical physicists and cosmologists. As this would probably bore the average reader, I shall pass it here, with a single remark to indicate how the great majority of professional men of science feel about this brilliant and aggressive young school of cosmologists: it is commonly described as "the idiot fringe of science."

No such harshly flippant judgment has been passed on the biological prophets of the "mysticity," to use the convenient word preferred by Alexis Carrel. Surely the testimony of a worker in the biological sciences, especially as applied to the human body, should be worth hearing on this subtle science of the future. Doctor Carrel has been awarded a Nobel prize for his purely scientific researches. In his widely read *Man, the Unknown*, he has much to say on mysticity that will interest many readers. I believe it is a fact that mysticity is more in the spirit of the Middle Ages than is anything else that came after Galileo. Should this indeed be a fact, the saints will have ample grounds for rejoicing, and may sing with a clear conscience, "We have conquered thee, O Galileo."

The last glass is almost empty. Before they go, my all but pickled friends pass a unanimous resolution deplored the havoc wrought by science on the literary mind. A generation ago, few cultured people knew anything about the scientific vocabulary, and fewer still cared to know anything. Thanks to the brilliant writings of the prophets of mysticity, an acquaintance with the words most frequently used in

scientific speculation is now a mark of distinguished culture. According to my now quite frank friends, the effect on both the culture and the common sense of the humanistically educated has been appalling. No speculation, no half-jesting guess, labelled science, is too absurd for them to believe as the revealed word of their long-sought and elusive God. They have found truth at last, and how romantically beautiful it is.

If science can so transform the most highly educated minds in society, what may it be expected to do to the mind of a ditch digger? Some may be surprised to learn that a ditch digger, or the man who fills our gas tanks and wipes our windshields, has a far better understanding of what science is and what it means for society than has the average paragon of humanistic culture and erudition. If there is any hope of intelligence in society it resides in those men. They live in the modern world.

Closely akin to the urge toward mysticity of the would-be "scientific" among the literati, is the patient digestion of dead history and decayed philosophies by the humanistic illuminati, the prophets and teachers of the living dead. Vast masses of historical facts—suitably colored to attract believers in the ghost of a past that never returns, and sweetened to captivate the taste of the hopelessly learned in dead "knowledge"—are compressed into formidable anthologies whose full weight would crack the skull of an adult elephant. These masterpieces of antiquated erudition are compiled by justly famous scholars who, apparently, have been so busy mastering all the names, dates, and places of the past 6,000 or 10,000 years, that they have ludicrously missed everything of the spirit of the past 300. But for allusions to the World War, or other spectacular events more recent than the Thirteenth Century, these

great works might have been written by contemporaries of Dante.

Having relieved themselves of this mellowed verdict on the antics of the "illuminati," my scientific friends proceed to specific instances. These are too numerous for citation here; two will be mentioned in a moment. But first my friends have something to say on the whole subject of this vast revival of mediaeval erudition. They declare it to be both pathetic and sinister. It is pathetic, they say, because so many poor or rich devils have been taught by the last (or current) "depression" that it is high time they come to their senses and learn something about the world they live in. The pathos enters with the teachers. Those who wish to learn—the humanistically cultured—know so little about anything outside their own prehistoric culture, that it is impossible for them to choose their teachers intelligently. Consequently, they pay brilliant historians of cultures as fossilized as their own to lull them back to the Middle Ages or, at latest, the Nineteenth Century. They are being grievously swindled and are too cultured to know what they are paying to have done to them. The sinister aspect is obvious. An entire generation of adults in search of a savior is being educated wholesale back to the Middle Ages. Of course, if that golden age of stupidity was the best our race can do, then all this rehashed culture of the erudite anthologists is the best possible education for children and college students—who are getting plenty of it—as well as for eager adults.

The man nearest the decanter has surreptitiously poured himself another highball. With this in him, there is little room left for the truth. So he tells all that he has in him at the moment. About ten years ago, he says, he was great friends with the manager of one of the largest and most pro-

gressive book shops in New York. The non-fiction "best seller" at the time was Spengler's colossal *Decline of the West*, then recently translated from the German.

My friend had read the book, as a self-imposed discipline. His experiences with the dogmas of the great *Decline* made him curious as to who else was reading the book. He asked the manager. "Oh," said the manager, "all the sophomores at Columbia University, the College of the City of New York, New York University, and the dozens of little colleges within a hundred miles of here. Professors of English are wallowing in it, too. The women's clubs also are eating their way through it. Great stuff, they say."

The manager himself had read the book, not as a sophomore or a professor of English or a lady might read it, but as a shrewd, somewhat cynical business man might. "And what do you think of it?" my friend asked. "Well," the manager replied, darkly, "I'll tell you after I've read the sequel. It won't be long now. Then I'll understand what Mr. Spengler is trying to hide behind all those words he uses."

A few years later, my friend was again in New York, and called on the manager. Spengler's sequel had by this time appeared. "Are the women's clubs chewing their way through the sequel, too?" my friend asked, recalling the manager's promise. "Some of them are," the manager admitted. Then he became profanely disgusted. ".....! They'll read anything that's advertised. Sometimes I feel like getting out of this racket and going into needle beer"—prohibition was still saving the nation from drowning itself in water. "What do you think of Spengler now?" my friend asked. "You promised to tell me, you know." "The same as I did before. All that gas in the first book was manufactured to float the toy balloon of his sequel. 'The

'Man on Horseback' is going to save the world. That's what Spengler says, anyhow. Can you beat it? And yet all those sophomores and professors thought Spengler knew what he was talking about. Come on; let's go out and get drunk. I know a good place just round the corner."

Spengler's *Decline*, my friend remarks almost with a bubble in his voice, was only *one* fat volume. His successors spawn their masterpieces in clusters, like frog's eggs. Their name is legion, and their converts number hundreds of thousands. Pareto's massive pseudo-scientific sociology came to the same disastrous end as Spengler's masterpiece: it sanctified fascism. But, according to my friend, the most impressive of the lot is the *Social and Cultural Dynamics* of the Russian philosophical sociologist, Pitirim A. Sorokin, in four massive tomes of about 700 pages each. (Number four is still on the stocks, as I write this.) Note particularly, my friend advises, the word "Dynamics" in the title. This gives the title, at least, that suspicion of a scientific flavor which the deluded culture-seekers in search of a Messiah demand. The treatment (my friend informs me; I have not read all the work) is once more the purely verbalistic in the best mediaeval tradition. As he is a man of science, who knows science when he sees it, he objects quite vehemently to that "Dynamics" in the title which, he says, is a misleading label on a very dubious package of goods. One volume of the four he guarantees to equal both of Spengler's. To drown his sorrow, he pours himself a tenth highball, and passes out.

As confession is alleged to be good for the soul I shall now confess, on the off-chance of improving my soul, that I was unacquainted with Sorokin's *Dynamics* until all of this book but the present section of the present chapter was being written as an afterthought. All the rest, including even the

“Postscript” at the very end, was finished, when I rashly called on Grace to ask what she was thinking about in preparation for the dog-days ahead of us. She had just returned from listening to one of Sorokin’s lectures, whether she had been dragged by a well-meaning friend. In the cool August light I thought I detected a gleam of the red in her hair. For some moments she was speechless, and did not reply to my question. Then she gasped, “You’ve got to read it. I borrowed it from a so-called friend.”

She got up, collected the *Dynamics*, and staggered over to me. “There,” she said burying me under what seemed like a long ton of philosophical sociology, “is the answer to your prayer—and mine. The 1937 model of a lifebelt. It’s got everything, *everything* in it. All those belts I gave you to report on, and all the crazy specimens your friend at the publisher’s shipped out, *all* of them are welded and glued together in Sorokin’s superbelt. He’s put together a belt that *is* a belt. I was going to try it out in the bathtub, just to be scientific, but I hadn’t the strength to fry an egg for my lunch after listening to that lecture. It was incredible; but my friend says it actually happened, and I haven’t caught her lying yet. So probably he did lecture and I did listen, but I can’t believe it—yet. Still, there’s the *Dynamics*. It must be true. He did lecture.”

She began fishing about in the *Dynamics* itself. I have not room for all the queer specimens she flopped down before me. I doubt whether even the entire Museum of Human Stupidity, which we visited some way back, could accommodate the new belt itself. The originals of all the now welded and glued components of this 1937 model are already in the Museum, of course; but, as assembled in replica by the enthusiastic manufacturer, the belt occupies several times the volume of its constituent members. This is only

partly due to the vast amount of what is technically known to lifebelt manufacturers as "hot air" with which the belt is inflated. An ever-expanding messianic complex makes the whole thing palpitate most alarmingly, like one of those medusa jellyfish you see breathing—or squirting—their way through the water.

Like Lincoln Steffens, Pitirim Sorokin appears to have been stood on his head by the World War and its sequels. But, unlike Steffens, Sorokin seems never to have rediscovered what his feet are for. Indeed, from what he tells us of himself and of the origin of his mystical *Dynamics*, it is difficult for anyone acquainted with elementary statics and dynamics to come to any other conclusion. He appears to miss the significance of the fact that, as he tells us, he had believed in any number of lifebelts before the War popped them all, one after the other, and he lost his belief in "democracy," "progress," "revolution," "socialism," etc., and what he calls "scientific positivism." Also in many other "isms." So far, excellent.

Having learned absolutely nothing from this wholesale scuttling of his pristine credulity, he opens his mouth from his eyebrows to his waistline, and swallows a vaster dose of credulity than all that he had rejected. Closing his mouth for a moment to allow intellection to pursue its supernatural course, he opens it again almost instantly and begins preaching a new "ism"—"Ideationalism." This is the stuffing of the 1937 lifebelt, compounded by the good old "tried and true" methods of classical logic and scholastic metaphysics.

If it were not tragic it would be ludicrous.

How is it humanly possible for a man to suffer the "singular conversion" and still walk the earth? That is a mystery which can be understood only by an adept at "Social and Cultural Dynamics." Sorokin suffered the conversion, and

now not only walks but talks—almost incessantly. Who shared, and who at present are sharing, the “singular conversion” which Sorokin suffered when the War stood him once and forever on his learned head? Look about you at the millions of mediaeval minds still infesting our unhappy planet.

“Ideationalism,” the new lifebelt, is a creation Saint Thomas Aquinas himself might have been proud to claim as his own. This singular compost of precise scholasticism and fluent ambiguity is not immediately ready for the perishing, but will be on the market the day after tomorrow when our ship goes down. May Ideationalism, “the true reality which is beyond appearances”—Sorokin’s substitute for “God” and all the pagan deities, including a mysterious “Whatnot” (literally) and the “Om” which fashionable Hollywood cultists still find so profitable for their wealthy clients—may this supernatural portmanteau of moonshine, roses, and mysticity float us back to the clestial haven of the Middle Ages. May it. But will it? Even Saint Augustine’s “City of God” and “Ultimate Reality” are included in the portmanteau. Bricks to suit any taste and all purses will be found in this 1937 lifebelt. Are we likely to reach dry land with such a thing?

If our past misadventures mean anything at all for the present and the future, we shall probably founder once more in the dark billows of “ideational” bosh. The outlook for such a happy issue out of all our afflictions is quite promising. Already, as my friend reports and as Grace confirms, the humanistically cultured are hard at their ideational gymnastics, dynamically plumping out their logical biceps, and daily increasing their metaphysical waistline. Acrobats in fashionable pulpits are already leaping wildly for the flying trapeze “ideationally” just over their heads; and

swarms of awestruck students in colleges, universities, and "adult education" classes, to say nothing of innumerable "culture" clubs, are respectfully stunned by the mass of scholastic nonsense which it is possible to utter in 1,300,000 learned words. Apparently none of these earnest grabbers of the 1937 lifebelt is aware of what has happened to metaphysics in the past decade—although this is only a very minor defect in the gorgeous belt. Soul-filling phrases, like "Reality is perceived as . . . everlasting Being" *may* have made sense a generation ago; today, they are not even respectable nonsense.

One further characteristic of the new dynamical lifebelt—the name suggests one of those things out of which the late Gaylord Wilshire, father of Wilshire Boulevard from Los Angeles to Santa Monica, made his millions—will be enough, and we can wave our latest savior a respectful farewell. Like Adam Smith's great belt, Sorokin's is packed solid with miscellaneous information which the lazy feeder will bovinely enjoy without the slightest effort on his or her part. "Feast, ye hungry, to the repletion of your souls, the stupefaction of your senses, and the emptying of your minds!" This command is not that of the manufacturing savior himself, but it might as well have been; over 1,000,000 of his words, when read in the order in which they occur, mean precisely the same thing.

Other humanistic followers of science are taking short excursions into the future by way of the notorious "fourth dimension." One of the most recent trips of this kind was taken by J. B. Priestley, who started out at *Midnight on the Desert* and finally found himself in the sixth dimension after passing through the fourth. After you have toured England with him in his *English Journey*, as suggested in an earlier chapter, follow him into the fourth dimension and see what

you will see. He has it all, from Abbott to Ouspensky and Dunne—he seems to have overlooked Maeterlinck. Half a dozen lessons from a competently trained teacher of mathematics would have saved the enthusiastic tourist to the fourth dimension the crass absurdity of his whole tour. But it is so much pleasanter to travel extensively than to sit still for a few hours and learn a little.

Now, I am not saying there is *not* a “fourth dimension” of the sort that bemuddles the literary mind. Nor does it much matter that the literary “fourth dimension,” as opposed to that which science and mathematics know, makes no sense, even with itself. The important point here is that the literary mind believes that all this mysticity has a scientific foundation, and therefore is on a par with any scientifically founded fact. It has no such foundation, and it has no scientific validity whatever. Anyone who gets comfort from it is as free to believe in it as he is to believe that twice two is sixteen, but he is only deceiving himself when he believes that his belief has any scientific meaning. It has none. It is mysticity pure and simple. As I have cited other people’s books, I may fairly cite one of my own, which some reader interested in the “fourth dimension” may like to glance at, *The Search for Truth* (1934).

After all this, from compound interest to the baboons, do you believe that humanity will be saved by clinging to science? Or do you anticipate another let-down, possibly into the bottomless ocean of mediaeval mysticity?

But one more lifebelt, a recent one, need claim our attention. A short inspection will show us what practical psychology has done for the soul. Incidentally and most importantly we shall inspect modern education, and see in what state practical psychology has left that popular lifebelt.

Chapter X

EXPLORING THE SOUL

Know thyself.—SOCRATES.

I. THE BEST PRE-WAR STOCK

IF SOCRATES has been correctly quoted, he held that a thorough knowledge of oneself is the key to contentment. That an intimate self-knowledge does frequently work miracles of self-satisfaction cannot be denied by anyone who has ever chatted for an hour or two with the patients in a hospital for the insane.

In one such refuge recently, the intellectuals—as they styled themselves—formed an exclusive society for mutual esteem and the united pursuit of the good life. Only those newcomers who had explored their souls to the innermost recesses of personality were to be invited to join the society. The letter of invitation stated so plainly.

“The intellectuals invite you to join their Society, because they know you to be a man (or woman) of high achievement who thoroughly knows himself (or herself). If you think you have invented perpetual motion, or if you believe you are Napoleon, you need not reply to this invitation, as you are automatically ineligible for fellowship in the Society of Intellectuals.

QUEEN ELIZABETH, Corresponding Secretary.

“P.S. Of course, if you *have* discovered perpetual motion, or if you *are* Napoleon, the Society will be highly honored by your acceptance.—ELIZA.”

I cannot certify the truth of this revealing little legend, as I heard it from a man who said he had been told it by a psychologist. What I should really like to know is whether the fellowship committee of the Society of Intellectuals is more discerning, or less, than its prospects for election. Until I learn the answer to that puzzling question I shall appreciate nothing at all of the mysterious benefits of psychology to a muddled mankind.

Sometimes called the youngest of the sciences, psychology is the science—if it is one—in which the general public appears to be most deeply interested. It is also the science which at this moment is of the greatest practical importance in human affairs, as I expect to show. The interjected doubt about psychology being a science at all was inserted to pacify my collaborator. Grace says it is an insult to science to call psychology a science. In my opinion, this goes too far. For in at least one major department of its activities, namely the practical, psychology is fast becoming as scientific as physics. I shall adduce plenty of evidence in this chapter to back my assertion. Grace calls practical psychology unadulterated quackery, but in this I think she is too enthusiastic. No out-and-out quackery ever made predictions which were subsequently verified. Practical psychology does just that.

One of the touchstones by which science is distinguished from its rivals is the ability of science to forecast the course of certain events with some accuracy. Classical astronomy, for example, easily passes this test while astrology does not, for it accurately predicts eclipses and many other events both as to time and place, while astrology never made a verified prediction in all its thousands of years of maundering. Physics has been passing the test repeatedly for at least a century. Metaphysics has yet to clear its first hurdle.

Chemistry also passes the test: if you combine oxygen and hydrogen according to a prescribed technique, you may safely wager your life that you will get water vapor. Alchemy, which preceded chemistry, fell down in its major predictions; thus, only fools' gold, and not the real thing, results from the prescriptions of the alchemists. To the scientific-minded, economics resembles alchemy rather than chemistry, and there is some doubt whether there is to be a scientific successor in this interesting case.

Physics and chemistry, usually considered the most advanced of all the sciences, have provided the methodological model copied by scientific workers in other fields, including psychology, sometimes to the obfuscation of the workers and the retardation of knowledge. Before they could become sciences, astronomy, physics, and chemistry had to outgrow their infantile vices of astrology, metaphysics, and alchemy. Scientific psychology struggled into existence under a six-fold blanket of philosophy, metaphysics, witchcraft, mysticism, religion, and superstition. That it ever got itself born and did not smother immediately is the miracle of the ages.

Practical psychology began passing the "prediction test" about thirty years ago. Since then its progress has been little short of supernatural. This astounding progress will be our main concern presently, and we need first recall only so much of the recent evolution of practical psychology as bears on this narrow objective alone. I hope to show, as a fitting climax to the drama of human stupidity, that no completer example of the debauching of a promising young science to the pollution of the whole human race is to be found in all the history of stupidity than what the unscientific-minded have done to psychology. Compared to what has been done with this debauched psychology, the prosti-

tution of physics and chemistry in the service of the narrowly religious-minded is "on earth peace, goodwill toward men."

The most brilliantly successful gas attack is after all only a localized triumph. A devastating air raid over a city that cannot be defended against such raids is in the same category. But the successful perversion by scientifically prepared propaganda of an entire nation of human beings is a victory of a far higher order. It makes possible the wholesale abuse of all the sciences by the unscientific-minded. Without this universal corruption of common sense and intelligence in the first place, gas attacks, air raids, and the rest of the litany of stupidity would probably never be chanted by nations of the seduced faithful. To wheedle any considerable number of heroic simpletons into coughing up their lungs because they are told that a blue flag is prettier than a green, a scientifically calculated campaign of national education is necessary. And in such a campaign, practical psychology is the pedagogue.

Psychology as a young science groping toward the Galilean method is a totally different thing from practical psychology as applied by the unscientific-minded. To take a rough analogy, there are certain powerful drugs which a competent physician may prescribe but whose action is not thoroughly understood. Such drugs are prescribed only as more or less desperate remedies, and when they cure, the cure is complete. A manufacturer of patent medicines, interested only in his own profit, hears of one of these tricky drugs. He forthwith manufactures enormous quantities of some patented compound containing a minute trace of the drug and markets it at anything from ten to a hundred times its cost to him. The effects of his proprietary mess are nothing like those of the unadulterated drug when

prescribed by a physician. Nevertheless, his deluded public swallows the muck wholesale, because the manufacturer is able to state, truthfully, that his stuff contains a drug which has been used with great success by physicians. A scientific psychologist is impractical in the same sense that a reputable physician is impractical. The manufacturer of a worthless or deleterious patent medicine, on the other hand, is practical in the sense that he is concerned first and last only with his own gain. Scientific psychology has nothing to sell; practical psychology has, and what it sells most successfully is dangerous quackery. That the sale is conducted in accordance with all the knowledge laboriously accumulated over half a century by scientific psychologists, does not make the swindle scientific.

The first laboratory where students might perform experiments in physics was founded by the German Magnus only in 1842. Long before that, however, solitary experimenters in the physical sciences had organized their own private laboratories, for instance, Roger Bacon in the Thirteenth Century. The first psychological laboratory, the German Wundt's, was founded in 1879. Before Wundt there had been some notable psychological research in the scientific spirit, particularly that of Weber, who modelled his methods on physics and invented the "law" still known by his name. Weber also was German. So too was Lotze, whose work of about the middle of the last century was more nearly in the hallowed Teutonic tradition of impressive mysticism. Lotze was the metaphysical ham in the Weber-Wundt scientific sandwich. Because the physiology of the time proved inadequate to "explain" much of what Lotze inferred, he invented a mysterious "soul" which it was possible to blame for everything, including his own scientific incapacity. Wundt, who leaned more to phys-

iology than to metaphysics, came perilously near to the behavioristic theory when he consigned Lotze's "soul" to the limbo of superfluous hypotheses, and defined the soul in general as a set of human actions.

Wundt in his turn also went violently metaphysical. Finding the perversity of individuals too simple, he invented a brilliantly unscientific "psychology of peoples" and a sort of comparative psychological anatomy of their languages, religions, and social institutions. As he knew but little more of scientific anthropology than Rousseau did, this grandiose undertaking was more or less of a blind kick in the dark at a non-existent football. Nevertheless, it started something rolling that is still rolling today like a mad Juggernaut over the common sense of at least one people—the "true Germanic." The pseudo-science of racial psychology is the dubious passport to scientific consideration of all "Aryan" Jew-baiters. And yet there are hundreds of scientifically educated men who believe that metaphysical nonsense and filtered moonshine are of wholly negligible importance in practical affairs.

With Wundt, psychology suddenly became so severely scientific for a short time that it almost ceased to be psychology. This strange interlude was due to the German Helmholtz, an outstanding figure in Nineteenth Century physics. Helmholtz came within an ace of abolishing psychology with his strictly scientific investigations on hearing and seeing. The solid massiveness of his work deflected many able men from the study of human beings as such, diverting attention to problems of mathematics and physics that had but little to do with human behaviour. The work which Helmholtz started is not yet finished. Nor is it likely to be till we return to beaver hats and hoop skirts. Nothing is quite so passé as an outmoded fashion, in psychol-

ogy. "Explanation," by the way, that so plagued the early psychologists, has been (temporarily?) abandoned in current science. No scientist today who wishes to avoid being dubbed prehistoric "explains" anything; he believes he has done well enough if he succeeds in giving a coherent description. If his description enables him to predict, so much the better.

In scientific psychology, as in every other science, the Nineteenth Century was a great age, whatever those who hate horsehair sofas, Dickens, and Victorian piety may think of the rest of that richly muddled century. Laboratory methods were introduced into psychology in that century. And although the flight from theology and metaphysics to an apish imitation of physics may not have taken the infant science very far at first, still it was a flight away from the obscurantism hallowed by tradition.

Toward the close of the century, a major highway to the muddle of our own times was mapped out by able explorers. The intellectual career of the French Binet reads like an unkind parody of that of modern psychology. Proceeding from an elaborate research into a mythical animal magnetism, Binet was diverted by pure chance from his mare's nest to a basket with real eggs in it. Matter-of-fact French government officials were responsible for this lucky accident. These practical men set Binet the problem of devising some fairly reliable means of separating the subnormal from the normal, morons from the intelligent. They already had the ballot box, with the results before them in their own Chamber of Deputies; but they wished something less emotional. Binet devised his famous tests, later improved by numerous investigators, including a regiment of extremely able Americans. Binet's were the first "intelligence tests" in history.

After Binet, his branch of psychology rapidly acquired

the final touch till then lacking to make it orthodoxy scientific. It became highly mathematical. All the elaborate technique of the modern statistical method, imagined originally by Francis Galton and perfected by Karl Pearson (both English) for mathematical explorations in biology, became instantly available for the measurement of human traits.

By means of these ingenious tests it is theoretically possible to obtain a spectrum of the intelligence of an entire people. One end of this mathematically exact analysis of a national mentality is a depressing moronic blue, the other, a fairly scintillating red of sheer intelligence. Or, if we prefer our colors the other way about, the spectrum may be inverted by passing the population through another set of intelligence tests devised especially for the purpose. Thus, in the famous U. S. Army tests of 1917-8, it was discovered that book-keepers, clerks, stenographers, and others of the same general persuasion, were the most intelligent stratum of American society. This was later inverted, at least partly, by tests designed to minimize the acquired skill in penmanship and the like which, as even a moron should have foreseen, gave book-keepers a flying start toward the red. Somewhat later still, the tests were again revised, with the aim of isolating "G," a symbol denoting, not God, as the hasty might infer, but "general intelligence," or in plainer but less exact English, the amount of brains given us by our parents. "G" is still being investigated, to the accompaniment of the screams and yells customary in the development of a healthy young science.

As usual in the first injection of mathematics into an infant science, enthusiasm has somewhat outdistanced discretion, and some who are rather hazy in their mathematical vision have difficulty in seeing which is ahead at the moment.

Among those who see none too clearly are the majority of teachers in the elementary schools. These unfortunates are compelled by their unscientific superintendents to give tests to their pupils without the slightest glimmer of what the statistical method is and what precautions are necessary in its use. Consequently, there are quite a few disgruntled parents who have learned after ten years' hoping for the Moon that their extremely gifted children—as rated by the tests—are not Mozarts or Einsteins but stenographers or filing-clerks. These discrepancies between prediction in the small and fact in the large are however so slight as to be negligible, and it seems to be agreed that, when properly read, the tests do give fairly reliable forecasts regarding the performance of certain kinds of work by sufficiently large groups of human beings. Thus in this direction we have taken a step forward.

The perfect comment on the application of intelligence tests was delivered by an army mule. This is so precious that I record it here in the hope that some day it may find its way into our national archives.

In 1917-8, when the boys were being fattened for their part in the salvation of democracy, the hovering psychologists of the United States swooped upon this God-given opportunity to try out their intelligence tests on several hundred thousand young men, at the moment as helpless as guinea pigs in a bacteriological laboratory. None was asked whether he, as a human being, wished to expose his naked soul to the scrutiny of whoever might care to inspect it. All submitted to the tests, willy-nilly. A democrat conscripted to save democracy is no longer a democrat. In fact he is indistinguishable from a royalist, a fascist, or a communist. As the British Tommies put it, "When they get you into the Army, they can do anything they like to you

except put you in the family way." Our own boys had a similar saying, couched in briefer Texan. Well, some of the officers at the training camps took the results of the tests rather lightly. In particular, one experienced colonel of the regular army assigned a young man who had stood well up toward the top of the whole conscripted army in the tests to the unintellectual duty of polishing mules.

Now, government mules may be rugged individualists, but nobody who has ever known one will deny their intelligence. They fairly reek of it. Recognizing a kindred spirit in the super-intelligent groom, one of the camp mules delivered a well-balanced kick to the young man's right leg, inflicting a perfectly beautiful compound fracture. The brilliant young man spent several months in a comfortable military hospital in the United States, mending his bones while his fellow conscripts were strewing theirs about at Chateau Thierry and in the Argonne Forest. When his bones knitted, he was too limpy for active service. Today he is the ace mathematical statistician in the United States.

I do not know what happened to the mule. But if he is still alive—some of the more intellectual mules live practically forever—and if Congress has any sense, he may yet get the bale of alfalfa and the medal which are his due. And while Congress is about it, it might enact an amendment to the army regulations, transferring the practical application of the intelligence tests from the hands of the officers to the hoofs of the mules.

Before continuing with the career of practical psychology (as distinguished from scientific), we may glance at one or two interesting contributions of the past generation to psychology as a whole. Many will have heard of G. Stanley Hall, an American pioneer in the science of getting at the facts of beliefs, emotions, and the like. Unhappily, as

many more will remember Hall as the inventor of the questionnaire, that inquisitorial torture inflicted on obliging people who have no shadow of interest in its prying questions about their love-life or their opinion of Karma, but who feel damnably uncomfortable as long as one of the infernal things is lying about unanswered. Thus conscience and questionnaires make cowards of us all. I have heard exasperated questionees bitterly regretting their lack of faith which renders them incapable of believing with all their psyche that Hall is now in Hell answering an interminable questionnaire, while the Devil stands over him with an incandescent pitchfork, ready to prod him to the next question when interest flags.

The last questionnaire to be answered by any considerable number of our citizenry inquired into their reactions toward beer. The brewers of America wanted to know. A proposed questionnaire that might have revealed something of interest was recently suggested by certain members of Congress, and hastily squashed by others as being "undemocratic"—an ideally false but factually true statement. It was proposed to find out in effect, exactly how many males between the ages of eighteen and forty would participate—if they had any option—in military operations only if the United States were invaded or threatened with invasion. It was argued as usual by the practical democrats that "attack is the best defense." In other words, the psychological thing to do if you want to remain at peace with your neighbor across the street, is to cross the street and give him a hearty kick in the pants.

This brings us to a passing mention of behaviorism, the extremely ingenious theory invented by the American psychologist, John B. Watson. Instead of philosophising about what goes on in a man's "consciousness" when he is kicked,

kick him, and observe closely what he does. Watson and his school would dissipate "consciousness" into a pre-scientific myth. The "mind" as a resident demon in the body directing and controlling actions, also is relegated to the realm of fable in favor of the observable "stimulus-response" fact. The early battles between the behavioristic psychologists and practically all others testified pragmatically to the extreme youth of psychology as a science. No adult science would have any occasion for such childish tantrums; an objectively verifiable appeal to experiment would settle the dispute to the satisfaction of all parties. Similarly for the current battles raging over the validity of some of Freud's theories.

The last, by the way, have recently been applied to the "psychology" of entire races and peoples in what, at first sight, resembles a resurrection of the Calvinistic dogmas of election and predestination. If any of these ambitious attempts to psychoanalyze races are to reach the level of science, they must pass the test of reproducibility of response under controllable and controlled conditions. *Ad hoc* theories pitch-forked together to correlate observed facts are not science, and may not be even a first step toward science. Theology accounts simply and adequately for the entire universe, yet it is not science.

Having mentioned Freud, we may state what appears to be his major contribution to practical psychology. Freud has taught all who are capable of learning anything the meaning of the word "rationalization" as used by his disciples. When, for example, some glib salesman tries to sell us bonds or a creed because, as he assures us, he has our best interests at heart, we may admit his altruism while doubting his self-knowledge. His goods may be as worthless as himself, for the simple reason that the idealized picture of himself

which he holds constantly before his eyes is a subconscious sophistication of the ugly fact that he is, in reality, a selfish swindler. Freud has taught most of us just exactly what we are when we have honesty enough to face the fact instead of our dishonestly fabricated fancy. He has also taught the teachable the wisdom of doubting every word their professed saviors and leaders say until their statements have been submitted to impartial, scientific investigation. This doubt is not yet widely enough diffused to count as an effective contribution to practical psychology; so in using the term henceforth we shall understand that practical psychology does not include Freudian realism.

An earlier contribution to modern psychology has had but little practical influence, although its comic interest is high. William James invented, among other things, "the stream of consciousness" in which James Joyce and Gertrude Stein have been observed disporting themselves. To a scientific observer, "unconsciousness" might be a more apt description than "consciousness"; while a behaviorist, having denied the existence of "consciousness", might detect three vacuums where only one had existed before.

I have been unable to discover what great pioneer finally revealed the full wonder of practical psychology to the human race. By 1910 astute advertising agencies were already hard at their campaign to convince the American public that it stank and that its best friend feared to tell it the unpleasant truth. But who first had the genius to imagine this adroit swindle? Before this unknown explorer of the human mind stood like Balboa, "silent, upon a peak in Darien", amazed at the limitless gullibility stretching away to infinity before him, the French Le Bon had initiated the study of mob-psychology. And before Le Bon, the English Bagehot in the 1870's had dreamed of the undis-

covered ocean in his political physics. But neither Bagehot nor Le Bon ever even faintly imagined the shining splendor discovered by that pioneer advertiser of the early Twentieth Century.

Even the most scientific part of Le Bon's mob-psychology suggested no practical means for generating a mob. Le Bon rested content when he proposed his "law" that the "intelligence" of a mob is not equal to the sum of the "intelligences" of its members. He also enunciated the theorem, popular with business leaders since the depression, that fear is a disease. Hence the current proposals for restoring an abstract "confidence" to an equally abstract "business," a project precisely as meaningful as the casting out of devils from epileptic sinners before infusing them with health and the holy spirit. Bagehot's mythology, too, lingers on in its tattered shroud of Newtonian dynamics, and we have irresistible economic or political "forces" transporting immovable voters from the Republican party to the Democratic. But the pioneers of advertising invoked no such sacred mysteries. Lacking a mob, they created one. Their practical sense taught them more of the psychology of fear and inferiority than the scientific psychologists had discovered in all the centuries since Aristotle. They learned by experience how to manipulate ignorance and stupidity for their own profit, and instead of pulling long faces at the "lack of confidence" of the public, cashed in on the public's gullibility. By 1910, practical psychology was ready to burst into full bloom. In 1914 it burst. We shall follow this blooming in some detail.

2. SELLING THE GOODS

We may have difficulty in understanding ourselves and in assigning the motives, if any, behind our actions. The

practitioners of practical psychology have no such difficulty. They understand themselves thoroughly, they know what they want, and they know why they want it. What is less pleasant for the rest of us is that the practical psychologists know us better than we are ever likely to know ourselves. At a week's notice they can induce an entire nation of us to make clowns of ourselves *en masse*. And while the fun lasts we simply love it. Only when the sour lees of our debauch of self-sacrifice for the profit of others have been drained do we wake up with a mouthful of goats' hair, and realize that it was not sacramental wine we had been imbibing. Once more, at the invitation of those who know us better than we know ourselves, we had been participating in the communion of fools. But the thick taste quickly evaporates, and we beg for more. We are never refused; for is it not written, "Ask, and it shall be given you"?

It all started out so rosily. Here at last was the "science"—the science, not a crazy patchwork of mysticism and sublimated witchcraft like its spiritual predecessors—that was to reveal our own human nature to us. The older psychology was largely a compost of metaphysics and human anatomy. Then the reign of brass supervened, and for all of a decade scores of diligent mechanics in cluttered laboratories from Jena to Tokio toiled to measure reaction-times and the effects of cigarettes or cocktails on the vile body. This fashion quickly became of only second-rate importance. It was realized that the psyche was not yet robust enough for calipers, and that more profitable results could be obtained by observing how human beings behave when left to themselves. Although it was not so labelled, the intensive study of mob-psychology was inaugurated with a bang shortly before the World War.

The first gratifying successes came in merchandising. A

few far-sighted pioneers in the art of selling the public what it does not want, and can use only to its detriment, saw that systematic misrepresentation within the strict letter of the law is the key to dominant selling. Not being experts themselves in the scientific exploitation of human gullibility, the manufacturers of trivial gadgets, worthless nostrums, and dangerous aids to female seductiveness, called in professors of practical psychology to chart their campaign of educating the public.

Schools of advertising mushroomed up all over the country. The graduates of these institutes of higher deception applied their psychic insight to strictly material ends. They had mastered three great empirical truths: repressed envy can be liberated by a judicious display of the material luxury of the rich, preferably through colored pictures of what Thorstein Veblen has called "conspicuous waste"; baseless fear can be generated at will by the educated and intelligent in the behavior of the half-educated and the unintelligent; snobbery and greed are sisters under the skin. The practical application of these all but universal principles converted what the older moralists had deplored as private vices into public virtues. It became almost a patriotic duty to squander money for the upkeep of other people's private yachts and racing stables.

The second principle in particular exhibited the saving graces of psychology to the unscientific. So far as a feeling for science is concerned, all but half a dozen human beings in every ten thousand live and think today in the darkest Middle Ages. Their bodies are here, their minds elsewhere. It is the easiest thing in the world, therefore, for the purveyors of Colorado mud—an actual instance—to convince the majority of women who can read a newspaper that every lump in the breast is cancer, and that the same can be cured by five applications of blue slime at two dollars a plaster.

Claims of this sort are ably backed by a direct appeal to science. How is the terrified sufferer, who as a matter of fact is most probably in excellent health, to know that "the eminent scientist, Doctor Du Val of Paris," whose researches are the envy and admiration of his colleagues all over the world, and whose unqualified endorsement appears on the package, has no shadow of repute in the world of science? One name is as good as another. Du Val or Roux or Fishbein, it is all one, provided each be labelled with the potent title of scientist. Thanks to practical psychology, science in general has at last been sold wholesale to the unscientific public.

Two sorts of palliative are usually proposed for abuses of public credulity in the name of science. The first is more in the nature of a challenging accusation hurled back at science itself. We are warned by the purveyors of doubtful goods that men of science do not agree among themselves as to the truth or value of this or that alleged discovery. The claims of one man are likely to be as sound as those of another, and we are only exercising our inalienable right to the pursuit of happiness in assessing the merits of each according to our innate common sense. This all sounds very reasonable. To a certain extent the facts justify such an attitude. If doctors of medicine, faith-healers, cultists, nudists, and osteopaths are all professed followers of science, how is the ordinary mortal, whose biological training has been negligible, to say which is practising science and which is not?

At first glance the problem appears hopeless. To practical psychology however all things are possible. The solution is supplied immediately: read the advertisements and articles devoted to healing in your newspaper and your favorite magazine. These have been carefully prepared especially for you by expert psychologists who know you

better than you will ever know yourself. Altruism, it need scarcely be said, is usually only a minor motive here. To circumvent this particular sort of difficulty it has been proposed that committees of leaders in the various sciences inform the public who are reputable men of science and who are not. This luscious opportunity has not been grasped as eagerly as it might have been by men of science. A possible reason for their reluctance is their suspicion that one pope at a time is sufficient.

The second proposed remedy for repairing the ravages of practical psychology is "more education," as if we had not had more than enough of it already. Education, almost anyone will admit without thinking, is a highly desirable thing, provided it is "the right kind." As the merits of education as a lifebelt for perishing humanity will be noted later, they may be passed here with a single allusion to one ludicrous instance. I regret that this refers again to our cousins across the sea, but respect for the tender feelings of my friend the policeman precludes anything nearer home.

When poison gas was first used (in 1915) as a weapon of Christian warfare, it caught the British totally unprepared, although they had been warned. The Cabinet, led by Mr. Asquith—an astute parliamentarian with a perfectly beautiful classical education in the richest Oxford tradition—were practically all of them men of culture and splendid education. Now, if an education is good for anything human, it should inculcate the manners of its own times and not those of some romantic but bygone century. A diner today may reasonably be expected to use a knife, fork, and napkin, and to refrain from wiping his greasy fingers in his hair after fishing his goblet from the common pot.

Those splendidly educated Cabinet members proved themselves singularly uncouth under that first gas attack. Something must be done about it; that much was clear,

even to a classicist. But what? Who knew anything about gas? Obscure classical allusions turned out to be rather physiological than immediately practical.

At last one brilliant man, who had heard of "stinks" at his famous Public School, suggested the chemists. They surely would know how to deal with the emergency, for were not stinks and chemistry synonymous in schoolboy slang? It was a dazzling suggestion. Did anyone present know any chemists? Of course; they all knew several. Chemists are those chaps who sell you pills and all that sort of thing in grubby little shops with three big bottles of colored water in their display windows, usually a blue, a green and an orange. To their bewilderment the Cabinet learned that the dispensers of pills and patent medicines could do nothing about the poison gas across the Channel. But the shopkeepers did know what a chemist is, and something was done—by the chemists—before the British army coughed its lungs up.

This illuminating history is omitted from the voluminous memoirs of the great statesmen who immortalized themselves and their caste by creating it. Does it suggest that education is not necessarily a remedy for the ills to which our human stupidity is heir? Ah, but the "right kind" of education is what we need to make us happy. In short, this ideal education is the lifebelt we have mislaid. Presently we shall see this new lifesaver in midocean and observe what is happening to those clinging to it. For the moment we note that psychology is the soul of ideal education and that it got its real start in that same war which introduced statesmen and others to poison gas.

3. KNOW THY NEIGHBOR

Psychology did not begin to come of age till August, 1914, when the gray German tide submerged Belgium. Although

Germany had been a leader in the older psychology, it was not she who showed the world what psychology can do. Indeed, her own attempts at enlisting the prejudices of neutrals revealed a ludicrous lack of human understanding. No German appears to be capable of making any non-German do his bidding and like it. The triumph of relieving neutrals of whatever common sense they may have had in 1914 was Great Britain's.

There is little need to remind any American over forty years of age of the absurdities he swallowed in those late summer months of 1914. Any doctor could have told him that it is impossible to lop off both of a child's hands except by a rigidly supervised surgical operation and have the child live. Those maimed Belgian children of 1914 defied all the facts of surgery and did not bleed to death. Instead they lived—in the heartrending fabrications of the propagandists—to be a drain on the resources of an outraged and impoverished motherland.

This is but a sample of what we can be made to believe. Anyone who wishes more can easily find it for himself.

After a debate by brute force gets really well started, of course, human nature does the rest, and atrocities by all parties to the dispute are plentiful enough to satisfy the most exacting. The only useful function of propaganda then is to sustain morale and keep the home-hates burning, by faithfully reporting to the armchair patriots the ungarbled facts concerning the other side. Miracles of collective misery for the multitude and handsome profits for their masters have been accomplished by this somewhat puerile strategy, and no doubt will be again.

The importance for us of these old fables of 1914 is not what they accomplished at the time, but what they mean for us today and may mean for us the day after tomorrow. Their astounding success surprised even their fabricators,

and for the first time in human history it was realized that modern psychology can make hundreds of millions see red where there is only white or at worst gray. The art of propaganda is practical psychology's gift to mankind.

For the past twenty years intricately organized gangs of scientifically trained psychologists have been preparing their fables for the next high festival of stupidity. If there is any "intelligence department" in the civilized world which does not consort with this "science" of ill-repute it has yet to declare itself. The "divine science, the science of the soul," which was to have revealed man to himself, appears to have let him down with a rather harder bump than usual.

If it were a question of antique decency this let-down might claim first prize for sheer petty meanness. But ethics only obscure facts, and we shall leave ethical evaluations to those who relish obscurity. The facts are plain enough. Propaganda always follows a fairly well defined pattern—devised by practical psychologists. The next is only a rough outline, but it give the essentials.

A certain end is to be gained. The gaining of this end will be to the great advantage of a few and to an even greater disadvantage of the many. But in order to gain the desired end the wholehearted cooperation of the many is absolutely necessary. To cite an example in passing, we recall the democratic formula, "government with the consent of the governed." As a rule the many would object violently to cooperating in any way whatever, for the desired end usually appears to them indecent, ruinous to themselves, and humanly despicable. For their part the few are well aware of these primitive inhibitions restraining the many, and they have a sincere contempt for them. Nevertheless, these uniformed decencies are a very real obstacle to progress and they must be removed.

The removal is effected by what one school of psychol-

ogists calls a substitution; overheated moralists have been heard to call it prostitution. The true object to be gained is replaced by a fictitious ideal, compounded of all those things which the many reverence above all else and for which they will, if need be, die. Thus the true object might be the preservation of the white slave trade, or the collection of debts owed to the few, when the substitute would be some such stirring appeal as, "Fight for the green graves of your sires, fight for your hearthsides and your fires, God, and your native land!" The classic instance of recent times is the crusade led by President Wilson to "make the world safe for democracy."

The technique of substitution, especially in diplomacy and military disputes, is beautifully illustrated by the old English custom of "box about," which originated with young Walter, son of Sir Walter Raleigh. Sir Walter had been invited to a very dignified dinner, and was asked to take young Walter along. But young Walter was "so quarrelsome and affronting," as Sir Walter told him, that "I am ashamed to have such a bear in my company." Young Walter promised to behave, and at the dinner sat next to his confiding papa. For the first part of the dinner, young Walter behaved beautifully. Then, out of a blue sky, he told a shockingly dirty story. Sir Walter was "strangely surprised and put out of countenance at so great a table," and gave his son "a damned blow over the face." Now, rude though he was, young Walter could not strike his own father. So he "struck over the face of the gentleman that sat next to him saying 'Box about; 'twill come to my father anon.'"

Once the substitution is successfully made—it is seldom difficult—the rest follows almost of itself. The few get what they wanted, and the many depart, muttering threats

that soon subside in silence. The majority of course never know what was done to them. Some may wake up in Heaven. The best authorities, however, are by no means unanimous on this dubious point, even asserting that martyrs have been propagandized into accepting a distressing substitute for eternal bliss.

4. KNOW NOTHING

The happiest people today are those who know nothing. Close approximations to this state of nihilistic blessedness abound in those countries which have followed the masters of applied psychology to their synthetic heavens.

Knowledge is measured by conformity to facts of experience which can be checked and verified by impartial investigators in their right minds. Faith, on the other hand, in some respects the antithesis of knowledge, is not concerned with verifiable fact in any sense better than a theological quibble.

This does not imply that faith and its concomitant beliefs are impotent in practical human affairs, from building bridges and elaborating metaphysical systems to persecuting others whose faiths and beliefs clash with our own. The contrary is the observed, verifiable fact. If faith cannot move mountains out of the way today, it can and does inspire engineers to believe that the mountains can be removed by machinery. It also can delude an entire nation into the belief that it alone is the standard-bearer of all that is worth preserving in civilization. Before this degree of faith contrary to the facts can be generated, it is necessary to extinguish knowledge; and this has been done by wholesale applications of mass-psychology.

The extinction of knowledge might well be taken as a working definition of modern education. It applies in a

greater or less degree to every civilized country in the world. In our own highly enlightened community the extinction of knowledge, by judicious suppression of certain facts rather than by deliberate perversion, is of course so slight as to be negligible. Others are less fortunate than we—or possibly much happier in their richer faith than ours. As we may be next in this greatest revival of faith since the Middle Ages, it will be interesting to see how it operates.

The technique of extinguishing knowledge had its first considerable success of modern times in the teaching of history to children. Like the scientists, the historians frequently have honest differences of opinion among themselves as to what is verifiable and what is not. Nevertheless, there is a certain hard nub of "historical fact" which is accepted by professional historians as reasonably accurate. This is the material on which the modern educator must work; for disputes over matters on which competent historians honestly disagree offer obvious dangers for the perversions of propaganda. What is admitted by competent men to be fact must be falsified before genuine progress in purposeful education is possible.

In passing, it may be recalled that education means, literally, "leading forth," or "drawing forth." Without a goal in view education is nonsense. We cannot "educate" at random, any more than we can lead an army across a desert by aimless walking in the sand. The goal, the aim, in education is the important thing for the mass being educated, not the specific things they are taught, and it is the manner, rather than the matter of teaching, which determines the direction in which the mass will move. Who determines this? Not the teachers, but those who own them, economically or otherwise. Occasionally a Socrates drinks the hemlock, but in the main, the well-disciplined army

marches forward under the supreme command. The commander in chief, it is true, may be none other than "the will of the people", a psychological substitute for the very definite will of the leaders who know where they wish to go and how to get there.

Having determined the irreducible nub of "historical fact," the educators for a purpose find the rest comparatively easy. "Give us a child for the first six years" one society of experts declared, "and he is ours for life." That was said a century or more before Freud was born. Modern child-psychology admits the justice of the boast. Catch them young; that is the secret. A child can be taught that lies are facts and he will believe lies for the rest of his life. In our own times we have witnessed the youth of entire nations being educated for life in a fixed belief that historical fact is something quite different from what professional historians of disinterested nations are agreed that it is.

The educators assert that this wholesale perversion of accepted fact is for the good of the educated. More explicitly, the new history is fabricated for the advancement of "the State," a metaphysical abstraction which does not exist. As "the State exists for the people," and conversely, it follows that the good of either is identical with that of the other. Here we have an interesting example of double substitution. What the educated believe they are getting—something for their own good—is not what they get; and the "good of the State," which the educators in chief declare they have striven to increase, is in fact their own.

A great deal of the credit for this striking triumph of education must be awarded to modern practical psychology. The earlier successes in merchandising and propaganda suggested that an entire generation can be educated at its source, and more cheaply, just as the poisoning or pollution

of a river in enemy territory is most effectively done at the headwaters. There was the additional inducement that the source was undefended and indeed incapable of defense, as is not always the case when a mature people is fighting to safeguard its water supply.

If Great Britain was the pioneer in modern propaganda, it cannot be claimed that she followed up her advantage (except in the United States) with a campaign of education. Always muddling along, she let her great opportunity slip. Of several competitors for first place, Britain's late enemy, Germany, appears to have a slight lead over the rest. Perhaps after all she was wiser in psychology than her rivals. Her claim to have been the mother of psychology is seldom denied, and it is only fitting that she should have brought her daughter to maturity. Nor has her claim to have been a leader in practically all of the sciences been seriously disputed. It seems still more fitting, then, that practical psychology should have re-educated German science in the modern manner.

The leaders of the German Reich were the first scientists in history to perceive that there is no such thing as an impersonal fact regarding the physical universe of science. "The new science is entirely different from the idea of knowledge, which found its value in unchecked effort to reach the truth." Such is the new science, according to the official proclamation of the German Minister of Education in 1936, at the festivities celebrating the 550th anniversary of the founding of the University of Heidelberg. There is much to be said for this latest revival of learning, and anyone who meets young German scientists knows how cogently it can be said. At last we have learned what science is. There are National-Socialistic laws of astronomy, and Jewish lies about astronomy, but there are no facts of astronomy. The

triumph of education is final and complete. The stars in their courses must caper or goose-step to the pipings of inspired educators. There is a precisely similar exhibit from Russia, but we must pass on.

Education, especially as modernized by practical psychology, is one of the weightiest of all the lifebelts man has donned before jumping overboard. From its very nature, education must be applied without the consent of the educated in any non-trivial sense. They are too young and too defenseless to resist, and too inexperienced to know what will benefit them, rather than the educators, when they take their active place in society. Their minds are made up for them before they have a chance to observe and think. The one or two geniuses of disobedience in every million may break the lockstep and desert, but the main mass will march obediently over the precipice at the command of their masters. Only when they begin to fall do they come to their own senses, and then it is too late to alter their course, National-Socialistic science notwithstanding.

The most popular of many proposed remedies is the libertarian formula, "the greatest good of the greatest number." Rather, this was what the majority of leaders found it most deceptive to tell the great masses of the led until quite recently. Now the fashion has changed here and there, until it is not only possible but easy to educate the masses of a nation to look forward to extreme mental anguish and great physical pain as the most desirable goods in life. It is at least doubtful whether these same multitudes would have reached this conclusion had they been left in a state of uneducated ignorance.

On its own merits, "the greatest good of the greatest number" as the motivating spirit of education is so untestable as to be meaningless. Consider, for example, the

perennial and still unanswered question of who is to decide what is good for anyone. Certainly the prospective beneficiary of education is in no position to do so. Well aware of this, the higher directors of educational policy are free to make of any given generation what they please. Many convince themselves and others that they do know what sort of education will produce the greatest happiness of the greatest number, and they further declare that their motives are purely altruistic.

Whether their motives are unselfish or not is of no practical significance. What is of the highest practical importance for those about to consign their offspring to the educators, is whether the latter are convincing enough to get what they want, namely, the offspring. Past experience would seem to indicate that the parents have themselves been so well educated that they accede eagerly to the demands of the educators. Mother-love and paternal affection are apparently innocuous as prophylactics against educational infection, as the parents themselves are heavily infested. It is a matter of record that hundreds of thousands of appropriately educated women consider it their patriotic duty to bear more children than is good for their health, in order that the educators may not encounter an embarrassing shortage of machinegun fodder.

Education, then, is not likely to prove the sort of lifebelt which mankind in the mass believes it wants. But education for generations has seeped so deeply into our marrows that we may be permanently incapable of knowing what we want, or what we would do with it if we got it. In that case, another dose of education will cause us no great discomfort, and may even act as an emetic or a beneficial purge.

Education in the past century has been trusted by the majority of people as few other remedies for human stupidity

have ever been trusted, and the outcome has been a let-down that has rocked civilization to its roots and all but jarred humanity's back teeth loose from its massive skull.

5. THE "REAL SENSE" OF IT ALL

It is now time to cast up the account and see where we stand. No more lifebelts remain on our list. Only the lifeline is left, and that I shall glance at in the concluding chapter. For ourselves, Grace and I feel slightly dazed after our inspection. A simple question put to us by a friend who had read what precedes and had made many helpful suggestions, all but knocked the sense out of us. Here is the question. "In the real sense of the word is there any conflict between 'education' and the scientific attitude of mind which you are upholding?" We felt deflated. What we have to say in reply will sum up everything we have said so far.

To answer the last part first, only Atlas, philosophers, theologians, metaphysicians, politicians, statesmen like Benito Mussolini, Josef Stalin, or Adolf Hitler, and their religious-minded followers have ever upheld anything. All of them have told the world that they were holding it up from falling into chaos, and all of them have assured us that if only we will uphold them and their revealed truths, then they will be enabled to hold up society indefinitely.

No one who has ever been touched, however lightly, with the scientific spirit upholds anything. Such a one is fully content if he can uncover a single fact likely to survive unmodified for a decade or two. The rarely fortunate sometimes turn up facts that retain their validity for centuries. But no matter how long the ascertained fact withstands the acid of scientific criticism, no man of science ever tries to force it on his fellow men. "Take it or leave it," he says;

"it is your business, not mine, what you do. I believe this to be a verified and verifiable fact; you may not. You are free to believe what you please and to act accordingly."

The scientific controversies that sometimes tip over into the sensational press are not the sales talks for this or that man's particular brand of science that the public occasionally takes them to be. What the public hears is a badly distorted echo of pitiless scientific criticism in a cold-blooded attempt to get at the facts. Quarter is neither asked nor given. If occasionally some misguided quack, who has blundered into science when he should have gone into politics, attempts to bolster his reputation by "upholding" his work or his beliefs as a politician "upholds" his party principles, he is ignored in professional science, no matter how great his popular reputation may be. Instances might be given; but as the individuals are still active on the popular front, it would be invidious—perhaps even libellous—to do so.

Thus, as was emphasized before we began our inspection, we have nothing to sell. We have upheld nothing. If, after all that has been exhibited, anyone believes that the scientific habit of mind is what he wants, he is free to try it. If on the other hand someone prefers to be as narrowly-religious as Malthus, Cotton Mather, Torquemada, or Francisco Franco, we would not dissuade him from following his own bent. We believe, however, that, *in the past*, the scientific habit has proved less disastrous than the narrowly-religious for the race as a whole.

The first part of our friend's question concerned the "real sense" of the word "education." This, we take it, was an ironical challenge to state the characteristic distinction between the scientific type of mind and other types, at least as far as we have been able to observe and understand the

scientific mind. We shall take the challenge seriously. So far as we have discovered, scientific minds do not attempt to get at the "real sense" of anything as most people understand the phrase "real sense." To a scientific mind, the "real sense" of anything, as the phrase is commonly used, is sheer non-sense. This non-sense, we have tried to show by our exhibits, has been responsible for more than one rare mess into which our race has metaphysicized itself.

The common use of the "real sense" of anything is so hopelessly befouled with decayed absolutes—absolute truth, absolute right, absolute wrong, absolute justice, absolute beauty, and all the rest of the absolute nightmare—that it necessarily defiles the user with virulent superstitions. "Right" and "wrong," for example, are scientifically meaningless when separated from their specific testable contexts: believers in "the real sense" of anything enshrine Right and Wrong like Castor and Pollux in their pantheon of Eternal Verities and worship them accordingly. The observant regard "right" and "wrong" as arbitrary labels attached according to taste or self-interest to things they either like or dislike. That is how it has worked out in the past, and how our exhibits show that it has worked. We do not rationalize our likes or dislikes.

We saw what a belief in absolutes did for Europe in the Middle Ages. Among other things, it made possible a wholesale and protracted picking of pockets. Dazzled by the humanly unapproachable splendors of the City of God, the victims believed in the "real senses" of righteousness and justice instead of using their eyes and their own senses to discriminate between the official metaphysics and the brute physical fact of their callous robbery in the name of absolute, abstract righteousness and justice. No scientific mind would have been deceived for a moment by the pious

fraud. Instead of believing what it was ordered to believe, it would have used its human intelligence to observe and to doubt. A few born scientists did doubt, and their rare skepticism quite suddenly changed the course of civilization.

We saw also what the abstractions of classical economics did for the mass of mankind in the Industrial Revolution. Abstractions "cream and mantle on the standing pool" of absolutes like the foul yellow scum on a horsepond. In the popular usage, the "real sense" of anything is an abstraction of so high an order that it is forever beyond human experience. Lack of time prevented us from exploring the pernicious nonsense—as the scientific-minded see it—that came into mathematics and science with the religious-minded Kant's notorious "thing in itself," his tremendous contribution to the eternal essence of the real sense of nonsense. But we did inspect Rousseau's unholy trinity of incorporeal Beings—Liberty, Equality, and Fraternity. Did those shining fabrications of the unscientific mind do what the mass of human beings expected of them?

To know the "real sense" of anything as the phrase is commonly used is to experience the mystic union with the Absolute itself. Science knows nothing of the Absolute, with or without a capital; for it has no means of getting at the beast with the implements at its disposal. For science the absolute does not exist. Nor, to state it once more, does the "real sense" of anything whatever make any sense in science. The creeds of religion, on the other hand, fairly bristle with the real senses of everything.

If this sounds like an evasion of our friend's question—it is not intended as such—I shall state what a scientific mind considers the real sense of "education" to be. Education is what it is and nothing else. "What it is" is determined by observation of the facts, as we have attempted to

do. Education is not what John Dewey or some high-minded zealot thinks it "ought" to be; it is what the observed facts reveal it to be. This general principle—applied here to the example of education—is what we have been saying over and over again all through this book.

To the religious-minded, education is some nebulous ideal in the Platonic mind of an all-wise and infinitely benevolent being. If we are humble enough, the religious-minded assure us, we may some day think this fatherly being's thoughts after him, and so attain the ideal society which has been in store for us—in the Platonic heaven—since before the beginning of time. For the present, we must be obedient children and believe our educators when they tell us that Papa knows best, and that it is good for our immortal souls to have our mortal noses rubbed in the dirt which they make and which we tolerate like the stupids we are. *They* know what education in "the real sense" is, precisely as their forerunners in the Middle Ages and the Industrial Revolution knew what was best for everybody, especially themselves. Those who assure us that they know the "real sense" of education, or of anything else, are adroit salesmen unloading their own patented brands of superstition and tyranny under a label that their gullible customers have been "educated" into believing marks what they want.

The most that any scientific observer can say of education (or anything else) is that it is what the observable facts make it, and not what anyone thinks it ought to be. Our inspection has shown what education is. We have not attempted to suggest any "improvements" because, to reiterate it for the last time, neither of us has anything to sell. Nor, we believe, is science greatly interested in trying to sell anything. If you wish to purchase a "good" education, scores of religious-minded saviors of society will be

only too glad to sell you one. If you are in a hurry, send a stamped, self-addressed envelope to Berlin, Rome, Moscow, or Tokio, and you will begin to get a complete correspondence course by return mail. If you can locate the address of old Thomas Aquinas, he can shoot you the whole works in one lesson. And he won't charge you a cent for his trouble. But if you have a glimmer of the scientific habit of mind, you will save your stamps and use your own head. If your head gets broken in the process, you will at least have had the satisfaction of breaking it yourself. Perhaps that after all is the "real sense" of education.

The example of education typifies the rest of our inspection, and there is no need to go over the ground again. Anyone who has viewed the exhibits should be in a position to ask his own questions, provided he has the interest and the energy. For ourselves, we believe the exhibits indicate that our race has not made a conspicuously intelligent use of its opportunities. We also believe that the blind credulity and unquestioning obedience to self-constituted authority inculcated by nearly all sects is in a large measure responsible for the flourishing state of human stupidity today. Whatever the race may do with science in the future, the religious-minded certainly keep on debauching it to the distress of the majority. From medicine and invention to government and practical psychology the story is the same.

This invariable triumph of the religious-minded over their opponents prompts us to ask whether, after all, religion in the narrowest sense possible has not greater survival value than science in the broadest. What is there about the hoary superstitions of baseless creeds that keeps them young and vital? Is it all a matter of mystical mumbo-jumbo, flashy vestments, smart uniforms, vulgar

banners, esoteric dogmas, secret passwords, and new-fangled salutes, or is there something in them that the race must have in order to survive, even as the wretched, quarrelling mass that it is? If anyone feels moved to enlighten us on this, will he please, for the absolute's sake and ours, refrain from referring us to the absolute? We have heard all that before.

Here I take leave of Grace and inspect the lifeline myself. She refuses to accompany me because she has already expressed her opinion that "science is not going to get the public anywhere." I am interested in trying to see whether science is going to get itself anywhere. Wherever it gets, there, I believe, the public will also get.

Chapter XI

THE LIFELINE

The great end of life is not knowledge, but action.—T. H. HUXLEY.

I. THE MODERN CLOISTER

I HAVE tried incidentally to make it plain that a “lifebelt” is not worthy the name if it is designed to accommodate only half a dozen peevish philosophers, or all the scientists in the world, or all the “plutocrats” of any or all societies, or all the “workers.” Unless a potential salvation is designed to take care of human beings as mere human beings, regardless of their class or economic station, it scarcely merits a passing glance. Until the great majority are at least moderately content, we shall continue to have wasteful strife and discontent even for the favored minorities. Those who “have” will be compelled to fight continually against those who “have not” to retain what they have, be it money or other material wealth, mental competence, leisure, or authority.

It is not clear from history that inequality is the root of all discontent, any more than it is evident that equality necessarily begets contentment. But it does seem to be a fact that too rugged an inequality or too smooth an equality fosters discontent. The question of how marked the differences should be in order to achieve the minimum of discontent may be unanswerable. But if it is, the impossibility of an objective answer will not deter social

idealists from attempting to find one. Until the attempt is seriously made, we shall not know whether the attempt itself was or was not a mistake, from the point of view of their own ideals, of those making it.

Why should anyone be interested in the general welfare? Or is anyone interested? Jeremy Bentham's answer, with a slightly different twist to fit present conditions, seems to be the only one so far offered. It is to the selfish advantage of almost any individual to show a little concern now and then for the wellbeing of his fellow men. Otherwise, he may find himself quite suddenly deprived of the capacity for being concerned about anything. Precisely that happened to scores of men of science during the Russian Revolution. These men were not malicious or cruel. None of them had ever actively persecuted anyone. Far from being in sympathy with the oppressors, the majority of these shot or starved scientists were sympathetic in a lukewarm sort of way to the humanitarian aims of the revolutionists. Some of the most eloquent pleas for social justice ever written were the impassioned verbiage of scientists who were shot—by the revolutionists. And why were these men shot?

A believer in poetic justice might say they were shot because they richly deserved to be shot, not for any moral turpitude, but for crass stupidity. For what could be stupider than calling attention to intolerable distress and doing nothing to relieve it? The upshot of such a stupidity is what any moderately observant man might predict: the eloquent orator calls unnecessary attention to himself, advertises needlessly that his heart is bigger than his head, and is expeditiously removed by a bullet as an obstruction to "progress." Such has been the usual fate of scientific and humanistic lovers in the abstract of humanity when

mankind in the mass decided to move. In the language of betting, the man who cannot "put up" will do well to "shut up."

The question of interest to us here is this: can science "put up" before it is compelled to "shut up?" According to political experts, we shall know one way or the other in a generation or less. Some describe the present ferment of civilization as a race between education and catastrophe, and pray fervently that education may win. Education is already winning, as we have seen. It is so difficult in a race of this exciting kind to know whether we are running toward the goal or away from it, or whether the ground is slipping back under our feet, giving us a pleasant illusion of progress.

Men who make their livings at science in the United States enjoy both the advantages and the disadvantages of their comparative isolation. Across the water, a few men of science are at last beginning to sense the threat of disaster, not only to their respective cultures, but to themselves, and are hoping it is not too late to convince their fellowmen that science has the "good," not the "evil," of humanity at heart. Here, in the United States, the great majority of professional scientists take only a tepid interest, if any, in the social implications of their science. It is not yet time for American men of science to be apprehensive for their livelihoods, as it is for many of their European colleagues. If and when some hundreds of American scientists join their German friends, 800 of whom were expelled from their "fatherland" as undesirables, they may begin to believe that science is not the pleasant occupation of a cloistered life that they have imagined it to be. Should our own particular brand of intolerance force men of science into the breadline or the jails for their political or social opinions, or for failure to

“cooperate” with some messianic dictator, their pleasant occupation will be gone forever.

England and the United States received the outcasts of Russia, Germany, and some less notorious centres of the new social enlightenments. When the United States decides to “clean house”—if it ever does—the refuse of the studies and the laboratories will find itself in the wastebasket. There is no other place for it to go. And, if we may judge by the almost universal experience of scientists in revolutions during the past two centuries, the men of science will be among the first to be swept up and thrown out. With the altruistic “parlor pinks” and the chattering “intelligentsia,” the hardworking, inoffensive seeker after facts for their own sake will be tossed into the discard. His more practical brother, the man who knows all about the chemistry and manufacture of poison gases, will be invited to remain, or to return, if he has already left the country to avoid the storm. Of all the hundreds of scientists expelled by the Nazis, only one, an expert on military destructiveness, has been begged to return to his fatherland. They want him back, full-blooded Jew though he is, to aid them in their re-armament program. He has not returned.

All this so far has been on the side of the scientist himself. I have assumed that a man of science does not relish torture and a violent death any more than does his unscientific brother. To save itself from destruction, science must do something for itself. And to do anything significant in the way of self-preservation, science must convince the mass of mankind that it is worth saving from imminent annihilation. Of itself, science cannot save itself. It must have the support of an overwhelming majority if it is to survive. It is not likely to get that support unless it can convince the majority that it is to their advantage

to protect free scientific investigation. We pass here from the selfishness—or social indifference—of men of science to the benefit which society as a whole “might” derive from a continued pursuit of impartial science.

Twenty years ago it would have been unnecessary to raise these questions. Even today many who devote their lives to science in the tradition of Galileo deny that there is any necessity to convince the public that science is more likely to help society than to harm it. They believe that the mere example of their own lives, dedicated to the passionless pursuit of science, is a sufficient service to society in exchange for the means of subsistence. That appears to have been the attitude of the scholarly monks in the earlier monasteries. Those cloistered societies are extinct. There is no question here of the “right” or “wrong” of such an attitude to the society which, after all, makes scientific research possible. But it is a very urgent question indeed for the man in the cloister what sort of life he is going to be permitted to live in the near future, or possibly what manner of death he shall die. Personally, I have no taste for martyrdom.

Twenty years ago it was taken for granted by nearly every thinking person, and by practically all who scarcely ever think, that science was a “good” thing for the human race. As usual, it was our friends the clergy who first became eloquent about the alleged “evils” of unrestrained scientific investigation. The depression after the World War, which the clergy, among others, told a temporarily repentant humanity was to heal all our wounds and make us a decent race, was offered as Exhibit A to prove that science is a menace to society.

Bishops and lesser lights of the Church of England assured their communicants that science was responsible

for the chaotic disorder. They proposed in all seriousness that scientists close down their laboratories for five or ten years, to give Christian morality a chance to catch up with religionless science. A "moratorium" of five or ten years on science and invention, these clerical optimists declared, would be long enough to teach their impulsive charges that wholesale murder in the name of civilization, and widespread squalor in the name of industrial progress, do not pay either the civilizers or the industrialists. How many centuries, unimpeded by impartial facts, had the predecessors of these good men enjoyed in which to sustain this thesis? About ten, was it not?

As if in answer to the reactionary prayer of the clergy, Adolf Hitler imposed a very practical "moratorium" on German science. The scientific output of Germany today is inconsiderable in comparison with that of only six years ago. But, ironically enough, the scientific output of Great Britain and the British Empire has increased correspondingly in the same period. The bishops must have had their fingers crossed when they prayed: about 400 of those "moratoriumized" German scientists are as active as ever under British protection. Most of the remaining 400 are similarly engaged in the United States. Nor can it be said that either the spiritual or the material prosperity of Germany has shown any marked improvement since Hitler decided to purge his country of the major portion of its brains.

Another question anxiously debated today is, "Why should anyone wish to persecute a man who devotes all his life to the search for scientific facts of no obvious commercial or military importance, say those of cosmology?" If I knew the answer to that, I should be able to explain why they crucified Christ. The fact is that such men have

been persecuted in the very recent past, and some of them are even now being persecuted.

The cloistered life of the "pure scientist" is not always so free of worldly cares as it might be. Among other irritations disturbing the tranquil flow of pure thought is the "scientific" anger inspired by attempts to tell the public, which pays the bills and keeps the cloister in repair against winter downpours and summer heat, what value the public is getting for its money. From personal observation I know it to be a fact that many competent writers, with first-hand knowledge of the social values of research in pure and applied science, are restrained by concern for their scientific reputations from telling the public what they know. For it is a fact, in this country at least, that any man who does attempt to inform the public as to what it is getting for its money, is in grave danger of losing not only whatever scientific reputation he may have but his job as well. Of all bigotries there is none so narrowly intolerant as that of the specialist who has made a minute study in 350 quarto pages of the left hind leg of a louse. His researches are not only beautiful to him, but sacred, and like the priests of old he is loth to share with the vulgar his revelation of the eternal truth.

If you seek the descendants of the monks (technically, they are supposed to have left none, as they were all alleged to be celibate) do not waste your time looking for them in the seminaries where abstracted young men mumble over their breviaries. Enter the cloisters of the sages who are compiling tremendous monographs on profundities only they have ever heard of, or ever will hear of. Like their spiritual progenitors they are saving their souls. Are such souls worth saving? That is the question the man behind the machine gun will be asking the day after tomorrow,

or possibly sooner. Most unreasonable of him, no doubt; but how is he to be answered? The rest of us would like to know whether he can be satisfied before his "typewriter" begins stuttering out its "T-t-t-tell m-m-e wha-a-at you th-th-ink you are d-d-doing, p-p-please."

2. THE SHIFTING BATTLE

For our present attempt at civilization, there appear to be only three lifebelts worth considering, government, religion, and science. The first will probably be combined with one or other of the second or third, and will take its complexion from that of its mate. So we are left with religion and science as the most popular materials for the manufacture of our belt. This does not imply that religion and science may not be combined into some strange compound we cannot yet imagine. That such a combination would indeed be something the like of which our imaginative race has never dreamed is evident. For any conception of religion, even the broadest, conceals somewhere in its vitals an element of absolutism, and science, as we now know it, has abandoned absolutes. Dogmatism and authoritarianism are also foreign to science as practised by scientists rather than by propagandists.

Religion of the official, dogmatizing kind, has had its day. So also has the supernaturalism that usually is a mainstay of such religions. The "love one another" of primitive Christianity has never had its day, and anyone who asserts that it has simply has not the truth in him. Whether it is ever to become effective may be referred to the "everlasting If," where we shall leave it here.

To assess the potential value of science as a lifesaver—or rather as a lifeline, for we have been pitched into the water too suddenly to have had time to put on anything—we

must glance once more at the present status of the official religion. Fortunately some unbiased information has recently been obtained by an impartial investigator, Roger W. Babson. Babson is known to practically every reader of the newspapers in America as the head of a bureau for business statistics. In an article on what he calls the "Pollyanna reports" of the kind mentioned in the second chapter of this book, compiled by editors of religious journals, Babson states that he is a moderator of the Congregational Christian Churches. It may be assumed therefore that he is not hostile to the churches. In his quest for facts to salt the propaganda of the clergy, Babson incidentally devoted the month of May, 1937 to visiting twenty "prominent Protestant colleges, most of which were started many years ago by ministers and earnest church people." His findings in these denominational colleges will be reported presently.

First, to quote what Babson found regarding the "membership" figures published by the churches. "The so-called 'church membership' figures published annually by the Christian Herald and broadcast by the press associations are incorrect. They contain not only the names of millions who have repudiated the church which they joined in their youth—but also millions who are dead and buried physically." What would the law have to say to a joint stock company that got out a report like that?

The explanation of the "gains" in church attendance advertised by the propagandists is equally simple and fully as illuminating. "Protestant church attendance has been falling off for many years. This may not be shown by recent statistics on church attendance at the Sunday morning service; but in many churches attendance at this Sunday service has been kept only by omitting the mid-week and

evening services, and by closing down in summer time. A record of the number of Protestants entering the churches during a year shows a constant falling off. This decline is taking place despite the fact that our Protestant population is increasing each year.

“Sunday school attendance is also falling off. The Congregational Christian Churches . . . have had a net loss of over 150,000 Sunday school scholars since 1925. . . . Study shows that the decline is primarily among those of high-school age and adults. The young children are still being sent to Sunday school to give fathers a chance to read the Sunday paper!”

Inquiring into the causes of this decline, especially among the young, Babson finds that “creed” is not the root of the trouble, but that “hypocrisy”—the flagrant difference between Christian teachings and Christian practices—is. In the denominational colleges, “attendance at chapel has fallen off tremendously and there is an indifference toward religious instruction.” Why not? “They [the college students] stated kindly and diplomatically that we church-goers appear to them to be a group of hypocrites! . . . they ask: ‘What use is the church?’”—after having emphasized the difference noted above.

Babson says the troubles of the churches are “due to the fact that Protestant young people are ‘getting their eyes open’”—a normal development for which many of our best people would like to drown their neighbors’ offspring. “Furthermore,” Babson prophesies, “the day is coming when Catholic young people will reach the same stage.” The last sounds like mere wishful thinking. Until “Catholic young people” see why his holiness, the Pope, is always whitewashing Mussolini and blackening Hitler, they are not likely to see anything.

What does Babson propose as a remedy for this state of affairs? "America again needs the churches, family prayers, Sunday observance, Bible study, and the Ten Commandments." Possibly it does. The comment of the young people, however, would seem to indicate that America's "need" may be satisfied by the churches in precisely the same way that Europe's was by the Church in the Middle Ages. Anyhow, they appear to think so. For Babson's answer "to these criticisms [by the students who objected to Christian hypocrisy] is that we laymen are living and doing business in a competitive world. We can be a little more generous than the non-churchman [they "can," but will they?]; but if we really follow Jesus we would be like the poor and helpless disciples of His day. To this these students almost unanimously retorted: 'Then why not try to change the prevailing economic system? If you cannot worship both God and Mammon under the present system of industrialism, capitalism and nationalism, you can at least take sides with those who are trying to change the system.'"

It is clear what Babson meant to report the students as saying; but as it stands, their retort implies that under some system other than the present we shall be able to worship both God and Mammon in perfect comfort. The possibility is not to be rejected offhand. Already it has attracted thousands of soft-headed, smooth-faced young men and women, and many men and women who are not so young. This holy alliance between God and Mammon is called "The Oxford Group Movement" by its friends, and "Buchmanism" by Oxonians who see through it. Babson does not answer the students' "you can at least take sides." If they still want an answer, let them explore the sides taken by the Church in the past, on all questions

from slavery to birth control. Their eyes will be wide open by the time they have finished their explorations. It is not unfair to say that in the great majority of instances the churches have been on that side of any controversy between human material indecency and human material decency which finally triumphed, but that before the triumph they were on the opposite side. There are exceptions, of course; but the above seems to be a fair adding-up of the score.

From Babson's factual report and other sources it appears unlikely that religion will be the lifebelt for our grandchildren that it was for our grandfathers. What of science? What sort of a record has it had? Is it to be trusted, if only as a lifeline for the immediate future?

As to the record, one striking difference between men of science and men of religion in their contacts with their fellow men is of more than passing significance. No man of science has yet tortured or killed any man, woman, or child for scientific heresy, or for any other brand of heresy. Men of science frequently have quite bitter differences of opinion over purely scientific problems, but not one of them has ever dreamed of torturing his opponent to make him change his mind. The same distinction is evident between men of science and fanatics of political theory, especially today. Vivisection is reserved, among men of science, for the so-called lower animals, in order to learn facts of value for the health of the human race, and is done on anaesthetized subjects. In the past, men of religion resorted to something much worse than vivisection long before anaesthetics were invented; and men of politics today, with plenty of anaesthetics at their command, prefer to operate without them.

Again, on the historical side, only an ignorant humanist

or an idealizing sociologist would deny that science has improved living conditions for the vast mass of civilized mankind out of all recognition compared to what prevailed before the deliberate application of science and technology to human life. Ask any of your wealthier friends who have misguidedly summered (or wintered, which is worse) in some picturesque old European castle how they enjoyed the experience. To get a fair reply, the castle must have been as nearly as possible in the virgin state. A little less unfairly, ask others how they liked the un-retouched English mansions they rented for the holidays. Unless your friends are fanatics for "antiques," they will confess that an American plumber lives better than the nobility—perhaps even than the king himself—could possibly have lived two or three centuries ago. His health and his food are better than the best available in "the good old days." And although this modern "king" is only a plumber, or perhaps a bricklayer, he knows a great deal more about keeping his body clean than the most delicately reared princess of the Middle Ages would have dreamed possible. He does not have to drench himself with perfumes to make himself bearable in polite society.

All this, the fanatics for "idealism"—a luxury spoken of with bated breath only by the well-to-do—denigrate as so much mere animality. Science, they declare has done nothing for man's "higher faculties." It certainly has done nothing much for theirs. They will still prefer the parochial "universe" of Milton or Dante to that which modern astronomy has revealed. As there is no disputing about tastes, we may leave the aggressively cultured to the undisturbed enjoyment of what their peculiarly antique education permits them to enjoy. But how would an idealist cope with an overflow in the bathroom? Probably

he would bawl for Saint Thomas Aquinas to heave him a lifebelt. The plumber, on the other hand, can get all the idealism he wants, by going to church if necessary.

The contemplation of nature through the eyes of science is an aesthetic experience of a high order, whatever those who have never experienced it may say. If aesthetics were the whole province of science, we should not be looking to science now for a possible deliverance from our afflictions. Until twenty years ago, the man of science could prosecute his research, as we have seen, like any monk in a mediaeval cloister, secure in his belief that "life, liberty, and the pursuit of happiness" were his so long as he lived. All that old serenity is gone. Awakened somewhat rudely from his dream of peace, the man of science in Europe today realizes that he is in the front line trenches fighting for his life. And if he is defeated, so is society. That, at any rate, is the belief of many. Conversely, if society is to founder in a wholesale stupidity of dictatorships, science will be defeated in its major objectives. The contemplative life, for one thing, and the dispassionate pursuit of factual knowledge for another, will suffer an eclipse. For the moment the aims of the mass of human beings and those of the scientists seem to coincide. Can those aims be achieved before brute stupidity conquers by the sheer weight of its all-trampling feet? It is an open question.

Consider first that dream of the Little Junior Leaguers. I put that in because it was inspired by those Russian aviators, and I believe in that kind of inspiration. There was also a deeper "subconscious" motive, which a friend revealed to me after analysing the dream. As is well known, we always misinterpret our own dreams. The "larger aspect" of that dream, my psychoanalytic friend tells me, was this: science is letting itself be led round by

the nose by all sorts of half-wits. He proceeds to elaborate. As his conclusions are practically identical with those stated in a previous chapter regarding the militarists and their friends the lunatic statesmen, there is no need to repeat them.

He does, however, give one striking instance of the manner in which the soldier-statesman can and does debauch humanitarian science. Without the fundamental discoveries of Louis Pasteur there would be no antiseptic surgery and no protection against disease-bearing germs today. Pasteur's germ theory of certain diseases, when developed in a practical way, has enabled medical science to wipe out many scourges and to bring many more under control. Lister applied Pasteur's discoveries to surgery. If you care to appreciate what that application has meant to humanity, glance through a medical history of the American Civil War. One with colored plates may be highly recommended. There was no antiseptic surgery in that war. Another instructive exercise is to compare the statistics for "enteric" (typhoid) of the Boer War with those of the World War. Tetanus also furnishes some interesting comparisons. The startling differences in those sets of statistics are due entirely to the applications of the science—bacteriology—which Pasteur founded. And what do our lunatic leaders propose to do with that science? Why, they say, it will make an admirable weapon for exterminating populations we dislike. Bacterial warfare is the next on their program.

With equal satisfaction they point to the application of chemistry. An official military statement of the relative value of gas in "casualty production" compared to that of other weapons in the World War gives the following figures: one "casualty" required 500 pounds of high explosive, or

5,000 rounds of rifle and machine-gun ammunition; whereas one "casualty" resulted from the firing of every 22½ mustard gas shells. When all these figures are reduced to a common denominator, it is proved that gas was four times as "effective" as other weapons. All this is a cause for rejoicing to the leaders.

How many of these jubilant lunatics is a man of science? Not one. How many received a scientific education? Again not one; the majority were educated in the humanities and the law. Is it possible that the legal mind is no longer to be trusted in a scientific civilization? Ah, but it is so impartial! The proponents of idealism need not get so excited about their projected return to "eternal truths," "creative speculation," and other refuges of the mediaeval-minded; the art and spirit of government, at least, are still back in the Middle Ages. Only yokels from the country are deceived by the streamlined bodies.

Confronted with this threat to its continued existence, science can do one of two things. It can continue to follow its own bent, discovering facts for their own sake, and greet its executioner with a smile. Perhaps that would be the sensible thing after all. If the mass of mankind has not sense enough to know what it wants, let it take what it gets. Those who do know what they want out of life can continue to get what they want for a few months or years longer. Then, if they wish, they can deprive their executioner of his anticipated triumph at the very last moment. The other possibility is to attempt to avert disaster. This cannot be done by piling fact on fact, discovery on discovery.

The battlefield of science, if science is to survive, has changed direction completely in less than a generation. Science has successfully fought fools before this. Can it

overcome them once more? Or are the weapons which science has permitted the careless to handle too automatically efficient to be recovered by a quick ruse before they go off in the imbeciles' hands? From present indications the latter seems the more probable. However, we may as well glance at a few of the suggestions that have been made for disarming the criminally insane.

3. UNCOILING THE LIFELINE

If science is the one remaining lifeline aboard the sinking ship, it must be uncoiled and hurled into the water promptly if it is to be of any use. Present efforts to uncoil it have succeeded only in making the excited crew look like that statue of Laocoön and his two sons all but completely enveloped in snakes. Time is the essence of humanity's contract with science, and the contract is about to expire.

First among the proposed methods of getting the lifeline into the water is our old standby, education. At the moment education is indistinguishable from Laocoön's younger son. Conservative estimates predict that it will take at least fifty years to get education free of its snakes, especially as the mediaevalists are always letting loose new serpents to assist in the attempted strangulation. Wriggling valiantly, education is using all the facts at its command, in the belief that Galileo is still stronger than Aquinas. But the facts which education can use in psychology, economics, and sociology are still too flabby to be regarded as sound science; and there is but little time to develop sounder facts by experimenting with things as they are, rather than with ideal situations which logic and reason say should exist but do not.

Every now and then tormented education lets out a defiant roar, telling the world what it is going to do if only

the muscular snakes will let it. Education is *going to* develop a sense of social responsibility in all the educated; it is *going to* inculcate a love of "truth" and "freedom"—if it can find a usable substitute for Saint Thomas' decayed brand of the first, and another for Rousseau's discarded model of the second; it is *going to* teach the power of clear, objective thinking in daily life; it is *going to* give every human being a broad knowledge of the main political and economic facts of the modern world. Education is *going to* do all this, provided it does not go to the bottom with the rest of us before it can get its arms and its neck free.

At least one of these good intentions is already being attempted in a half-hearted, wishy-washy, sentimental sort of way in the education of prospective engineers. These men are the future builders of our material civilization. They are being taught some economics in some engineering schools. If the texts they use, according to the school catalogues, are any indication of the sort of economics these innocents are taught, we may confidently expect another generation of Adamites. The damage a son of Adam with a sound engineering education can do in a scientific society is probably beyond the capacity of his longest slipstick to calculate.

The economics and sociology taught to the majority of students intending to become plain, unprofessional citizens would raise no blush to any maiden's alabaster cheek. Nor would it cause the laziest moron in the back row to stretch what parody of a mind he may think he has. There are numerous exceptions to this prehistoric state of affairs, of course, but the great mass is being lulled as described. Is it possible that some day in the not too distant future the lecturers will find their classrooms as empty as the college chapel? You can pull the woolen blanket over the eyes of

your baby in its crib, and presently it will be fast asleep. But not even the stupidest educator can blind the eyes of the present young generation in America to what it sees going on all about it for much longer. The young are seeing not only that, but are seeing clear through their educational misleaders. Propaganda is meeting its match. The propagandists did not catch their victims quite young enough in this instance.

Old Laocoön himself is letting out some lusty bellows about what *he* is going to do when the snakes let him. First on his program is the solution of the great "paradox" of our age: starvation in the midst of "overproduction." The old simpleton persists in roaring "paradox!" when there is no paradox about it. Facts are never paradoxical, and only a little patience suffices, as a rule, to dispel the false appearance of paradox. So long as the old man keeps shouting "paradox, paradox!" he is not going to solve his problem.

In another of his projects he is more sensible. Scientist though he admits he is, he has no intention of running for Congress. But even in his becoming humility—so decently appropriate as a sort of garnish for the snakes strangling him—he cannot refrain from bellowing a maledictory epitaph on the late "Brain Trustees" of malodorous memory. Who were these men, he roars, and who ever told them they had brains? Were they selected by experts in their own fields, or were they suggested by witless politicians who wouldn't know a brain if they saw one served up in cracked ice on a silver platter? Were they pure invertebrate verbalists, or were they not? Was there a reputable man of science among the lot of them? Or was there even a single man of them who knew anything about science? Finally, the aged snake-charmer wants to know how much

longer mediaeval brains are to be permitted to tyrannize over a scientific civilization. The largest snake whispers something in his hairy ears and he laughs long and loud, as if the twin forks of the flickering tongue had tickled his very ear-drums.

Laocoön's elder son is somewhat pessimistic. The snakes have got him by the feet, and he is beginning to wonder whether he will ever walk again. His was the wild ambition to be a scientific dictator. In his youthful optimism he had believed it possible to make men of science coldly objective on matters not immediately connected with their science. A terrific debate between Laocoön and his younger son over the merits of fascism as opposed to communism is raging at the moment, and the elder realizes sadly that neither of the debaters is offering a single fact in support of his arguments. Even the sibilant obscenities of the snakes are preferable to the cacophany of this last family row, and the elder son aids the strongest snake in its job of strangling.

Not all men of science would agree with the elder son. There come to my retinas the vivid pictures of many social gatherings during the past five years, where I was fascinated by the often-renewed contest between a venerable geologist with one foot in the grave and an outstanding astronomer in the prime of life. The old geologist flamed with a holy missionary zeal for the cause of science in the salvation of humanity. Over sixty years in the service of science had convinced the veteran that science can solve all problems, even those of perverse human nature. His extraordinarily keen and fertile mind was not proof against the insidious seductions of the Jehovah complex. His usual victim was the astronomer.

“What good for humanity are all these discoveries you

are making about universes the human race will never explore?" he would demand pugnaciously.

The astronomer is a naturally courteous man. His reply does not matter here; either you already know its substance, or you are incapable of ever knowing. Deceived by a soft answer, the aged proselyter would proceed to exhortation. "The world needs men with brains like yours to straighten out this awful muddle we are in. Drop your astronomy, and put all those fine talents everybody knows you have on social problems. It is your duty to God and man!"

The old gentleman, now deceased, would have disagreed with the proposition, which most men of science believe to be true, that the first duty of a born artist is to stick to his art. The same holds for geniuses in all lines, from mathematics to plumbing. If politics, economics, psychology, and sociology are to have their Galileos, Newtons, Darwins, and Einsteins, those leaders are not likely to step out of scientific laboratories and studies. The most we can expect is that the objective, fact-finding spirit of science, which has made our material civilization what it is, will animate some fresh and unprejudiced mind to attack social problems in the scientific spirit. The nature of such an attack and the direction it shall take are at present unpredictable.

Is the lifeline going to be uncoiled in time to save those about to be plunged into the water? No man of science who values his reputation will prophesy.

Postscript

GRACE has just handed me her report on my report. With it she gave me a good piece of her mind—not that she will miss it; she has plenty left.

She says I am a fatuous optimist. To read my report, she says, you would think the human race is composed entirely of Einsteins and Aspasia.

Others also accuse me of being full of sweetness and light. There is my friend, for instance, connected with a publishing house interested in this book. He shipped me a whole cargo of lifebelts that he wanted to see included. But I knew perfectly well that if I did exhibit his prizes to the public gaze, all the windows in his establishment would be smashed and he would find his printing presses full of bricks.

The specimens Grace wanted me to toss about are even more dangerous. I tried one out in the bathtub last night and had to call the fire department. They were completely baffled; the infernal thing was nothing but a huge washer of solid sodium. It floated all right. Think what would happen to you if you slipped one like that under your arms before jumping overboard.

It is too late now for rebuttal of the serious charges against me. All I can do is to jot down a few items from the trade-lists of reputable firms. Some of these items are taken from old lists, others from this spring's catalogues. Each has been guaranteed at some time by the largest manufacturers to be a safe and sound lifebelt. The brief notes following the several items are Grace's reports after thorough inspection of each model.

1. *More education.* God forbid.
2. *Less education.* Ditto.
3. *No education.* Worth a trial in the bathtub.
4. *Coeducation.* Might have floated if there had been four sexes instead of two.
5. *More free public libraries.* Ask Carnegie.
6. *Yoga.* Seems to be stuffed with damned rot.
7. *Mysticity.* Consult Saint Thomas Aquinas and Saint Francis (former address Assisi, present address unknown).
8. *Homosexuality.* See next.
9. *Heterosexuality.* See preceding.
10. *Sweetness.* See Light.
11. *Light.* See Sweetness.
12. *Pessimism.* Sinks.
13. *Optimism.* Floats. Like a balloon.
14. *Paternalism.* See next.
15. *Maternalism.* See next.
16. *Infantilism.* Universally recommended for children under 80.
17. *Ism.* Manufacturer's name not given, therefore untrustworthy.
18. *Ism. (Improved model).* Manufacturer's name given, therefore untrustworthy.
19. *Rejection of all isms. (American model).* Does this include patriotism and Americanism? Manufacturers do not state.
20. *The simple life.* Might float many relieved of whatever brains they may have.
21. *The abundant life.* Add castor oil, and test in the laboratory.
22. *A great revival of religion.* Who is going to inflate it? Manufacturer's trademark illegible.

23. *Suppression of all religions.* Including this? Suppression cannot suppress suppression. This model apparently adulterated with dangerous double negative and vicious circle.
24. *Consumer's research.* Keep researching, boys.
25. *Scientific Control.* Of what?
26. *Communism.* The red dye all comes off in hot water.
Also in cold.
27. *Fascism.* Held together by one pin.
28. *Democracy.* Being tested in bathtub. Still floating since the day before yesterday. Air bubbles beginning to appear on surface of outer tube.
Try chewing-gum.
29. *Monarchy.* Is one fool better than none? Tests still in progress. Consult the Irish.
30. *The totalitarian state.* State of what? Specifications omitted.
31. *Bureaucracy.* Too much like a chest of drawers.
32. *Goat glands.* The aged cannot hang on.
33. *Red flannel underwear.* Female passengers prefer drowning.
34. ?
35. *Bee culture.* Too much sting with too little honey.
36. *Chicken farming.* Worth a serious trial. Eggs should be black before using.
37. *Back to the land.* What, again? And how do you get there when you are in deep water?
38. *Single tax.* Two many baskets for one egg.
39. *Love thy neighbor.* Try it. I have.
40. *Do unto others as you would that they should do unto you.* Overweighted with woulds and shoulds. Appears to be sunk at present. If feasible, interchange "would" and "should," and test buoyancy.

41. *Own your own home.* Floats better if your neighbor's home is added.
42. *Do something.* See next.
43. *Do nothing.* Still?
44. *More laws.* And sink the ship? The passengers must have *some* room aboard if they are to get anywhere.
45. *Reform.* This model might be more attractive if its present pretzel shape were made more doughnut-like.
- 46 to infinity. *And so on.* Same quality as 1 to 45. Take your choice, and pay with your money, or with your life, or both.

I shall now, in conclusion of the whole matter, answer the inevitable question "Well, since all these other lifebelts are what they are, what do *you* offer?"

I have just returned from a walk along the cliffs. It was a perfect day and a perfect walk. Standing on the cliff above a tiny bay notorious for its dangerous tide-rip, I noticed the little white penthouse where the life-saver usually hangs. I walked over to inspect it. The sea was as smooth as glass, and there was not a human being within a hundred yards of me. No life was in danger at the moment. I read the black stencilled warning: "For use only in emergency," and looked for the life-saver. The little penthouse was empty.

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